SOFTWARE CONVERSION STUDY
for the
BUREAU OF LAND MANAGEMENT

DELIVERABLE 6/7.3

FINAL

ADP MODERNIZATION PROJECT

October, 1987

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EXECUTIVE SUMMARY

This document has been prepared as part of the BLM ADP and Data Communications Modernization Project (ADEMP) being conducted by American Management Systems, Inc. Its purpose is to provide BLM with an estimate of the effort, cost, and scheduling requirements of converting the Bureau's existing software programs to a new "generic" technical environment. The scope of the study includes all Honeywell and GIS application programs and data files. Not included are applications and programs run on other vendor's equipment or on computers belonging to agencies outside BLM.

Software conversion involves transforming application programs and data files -- without changing any functionality of the programs -- so they may be used in a different technical environment (e.g., on a different vendor's equipment). For organizations with a considerable amount of existing application programs and data files, the conversion effort is complex and expensive. Considerable planning is required if it is to be completed successfully.

The technical architecture is but one of four components that make up an organization's ADP infrastructure -- the other three being the applications, data, and management and support architecture. The technical architecture defines the foundation of hardware, systems software (core software which "runs" the hardware, e.g., operating system software), network capabilities, and related capabilities required to support the overall ADP infrastructure.

A technical architecture can be described in many different levels of detail. For purposes of the conversion study, a high level, or "generic" level of detail was assumed. At such a level, a technical architecture describes generic equipment, such as a "VAX 8200 class minicomputer" with the realization that a procurement could result in the installation of any of a number of vendors' equipment.

The objective of the ADEMP is to put into place the computers, communications network, terminals, system software, and other components which will be needed to support the Bureau over the next ten years. The U.S. General Services Administration (GSA) requires that a conversion study be submitted as part of the Agency Procurement Request (APR) for new ADP resources. The requirements for, and tasks of, conversion studies are outlined in GSA's Federal Information Resources Management Regulation (FIRMR) in sections 201-2.001 and 201-30.012. Just as important, the conversion study provides BLM with an initial estimate of the resources required to perform the conversion of their software programs and data files.

In order to estimate the effort, cost, and scheduling requirements of converting BLM's applications software and data files to a new technical environment, AMS used version 4 of a software conversion cost model developed by GSA's Federal Software Management Support Center (FSMSC). Resources are estimated for a set of baseline conversion tasks defined by FSMSC. These include:

- Conversion and Planning Analysis;
- Inventory and Conversion Stude Preparation;

- Work Package (system or subsystem) Identification and Preparation;
- Test Date Generation and Validation;
- Application Program and System Software Conversion;
- Data File and Data Base Conversion;
- Operation Control Language (for controlling computer resources, i.e., scheduling of jobs) Conversion;
- Redocumentation;
- System Testing;
- Acceptance Testing;
- Site Preparation;
- System Transition;
- Conversion Training;
- Conversion Management and Administrative Overhead; and
- Conversion Tools and Aids.

Over 100 parameters (values for various technical architecture-related characteristics important to conversion) were input into the model to generate resource estimates required for conversion. Input parameters included data on the number of application programs and how difficult it would be to "move" the program code to a new technical environment, for example. Parameter values were developed for each BLM site using three sources: BLM responses to Software Assessment surveys; recommended defaults or guidance based on the FSMSC user's guide for the conversion model; and estimates based on AMS judgement, BLM experience or industry rule-of-thumb. For a complete description of the model and the values for input parameters for each site, the reader is referred to Chapter 4 and Appendix D of this document.

The output generated by the FSMSC model includes a summary cost estimate and staffing and resource schedules for each site. Resources are broken down by the conversion tasks listed above. Total costs estimates range from $312,800 at the New Mexico State Office to $3,610,000 at the Alaska State Office. The total estimated conversion costs generated from running the model with the data collected for each site are provided by conversion task in Figure EX-1 and by BLM State Office (as well as DSC and BIFC) in Figure EX-2.

In addition to providing an analysis of the effort, cost, and scheduling requirements for software conversion, this document also analyzes the two feasible procurement alternatives as previously presented in AMS' deliverable Refinement of Feasible Options, delivered to BLM April, 1987. (This deliverable analyzed the complete set of options available to BLM as identified in the FIRMR, section 201-30.009.) The two most feasible alternatives were a fully competitive procurement and a compatibility-limited procurement.

The result of the analysis was that BLM should conduct a fully competitive procurement for its new technical architecture. A compatibility-limited procurement would most likely result in opposition due to the fact that there are no Honeywell-compatible vendors in the computer marketplace; thus making a compatibility-limited procurement equivalent to a sole source procurement. This would result in a perceived restraint of competition.

EX-1

The Conversion Cost Estimate for BLM Totals $12,234,000

CONVERSION TASKS	COSTS (in thousands)
Conversion Planning and Analysis	$839
Inventory/Study Preparation	85
Work Package Indentification and Preparation	440
Test Data Generation/Validation	2,094
Software Conversion	1,300
Data File/Database Conversion	432
Operating Control Language Conversion	75
Redocumentation	516
System Testing	1,081
Acceptance Testing	812
Site Preparation	1,488
Conversion Training	1,241
Management/Contract Support	1,533
Tools/Aids	300
TOTAL	**$12,234**

EX-2

Conversion Costs at Each Office
Range from $312,800 to $3,610,000

FACILITY	COSTS (in thousands)
Alaska State Office	$3,610
Arizona State Office	539
Boise Interagency Fire Center	349
California State Office	383
Colorado State Office	327
Denver Service Center	3,370
Eastern States Office	319
Idaho State Office	351
Montana State Office	668
Nevada State Office	513
New Mexico State Office	313
Oregon State Office	426
Utah State Office	471
Wyoming	595
TOTAL	**$12,234**

1. INTRODUCTION

1.1 Purpose and Scope

This document is one of the deliverables in the Software Analysis Task, defined in American Management Systems' (AMS) contract to support the Bureau of Land Management's (BLM) ADP Modernization Project. The objective of this document is to provide BLM with an initial estimate of the effort, cost, and scheduling requirements of converting current BLM applications to a new "generic" technical architecture. In addition, this study fulfills the General Services Administration (GSA) requirement that a conversion study be submitted as part of the Agency Procurement Request (APR) for new ADP resources.

The applications included in this analysis are the Bureau-wide and State-specific applications that are currently running on a Honeywell DPS-8/70 or on Honeywell Level 6 computers and the Geographical Information Systems (GIS) applications running on Data General and Prime computers. Excluded from this analysis are office automation applications and applications run on other vendors' equipment and applications run by organizations outside of BLM (e.g., other Agencies and the Bonneville Power Administration). These applications are small, and would not have a significant impact on the conversion estimates.

In order to estimate the effort, cost, and scheduling requirements of converting BLM's applications software and data files to a new technical environment, AMS used the software conversion cost model developed by GSA's Federal Software Management Support Center (FSMSC). Information on BLM's existing applications and data files are input to the model to determine the estimated schedules and costs for software conversion tasks defined by FSMSC as well as costs for installing the new hardware (e.g., site preparation and training).

In addition to providing an estimate of the resources required for conversion of existing BLM applications and data files, this document contains an analysis of the two procurement alternatives identified as possibilities in AMS' previous deliverable (Refinement of Feasible Options) -- a completely competitive or a compatibility-limited procurement.

1.2 BLM Background

This document assumes the reader is familiar with the mission and organization of BLM. Readers unfamiliar with the Bureau may refer to Appendix B of this document for an overview (or the Task 1 deliverable of the ADEMP study or the BLM Annual Report (available from the BLM Office of Public Affairs) for a more detailed description).

1.3 Project History

BLM's ADP facilities provide data processing support for the programs within the Bureau of Land Management. These facilities are located in BLM's Denver Service Center (DSC) and State Offices (SO). BLM's current hardware environment, system software, and applications programs are described in Chapter 2 of this document.

The computer hardware, system software, and communications networks in place today do not meet all of BLM's ADP processing requirements and will not be able to support the new applications currently under development. In July, 1985 the Bureau of Land Management contracted with AMS to perform an ADP and Data Communications Modernization Project (ADEMP) study. The overall goal of the ADEMP is to implement the technical architecture (i.e., computer equipment, systems software, and data communications equipment and software) which best meets BLM's needs over the next ten years.

One of the major goals of BLM's ADP Modernization effort is to ensure that all of BLM's ADP systems are supported by an integrated hardware, system software, and telecommunications environment. The ADEMP Study will provide a framework for all of BLM's data systems, including purely administrative applications (such as financial management), case/operations processing

systems (such as the Automated Land and Mineral Records System), and land and resource inventory and analysis systems (such as the Bureau's Geographic Information System).

Figure 1-1 depicts the tasks performed by AMS to support BLM's Modernization effort.

1.4 Methodology Used in Conducting this Study

Conversion, as defined by GSA, is the translation of the applications software to a new technical environment without functional improvement or change. The requirements for, and tasks of, conversion studies are outlined in GSA's Federal Information Resources Management Regulation (FIRMR) in sections 201-2.001 and 201-30.012.

In order to estimate the software conversion costs to be incurred by BLM should they decide to convert (rather than redevelop) their applications, AMS used version 4 of GSA's Federal Software Management Support Center's (FSMSC) automated conversion cost model.

The input data for this model were obtained from past AMS deliverables and working papers (see Figure 1-2 for a list of all documents delivered to date), surveys completed by BLM ADP staff, group and individual discussions and telephone interviews, and documentation on the FSMSC model. The data was then reviewed with a BLM team which refined the input to ensure Bureau-wide consistency and BLM-relevant input variables to the model.

1.4.1 The Federal Software Management Support Center's Software Conversion Cost Model

The Federal Conversion Support Center (FCSC) Conversion Cost Model (Version 4), developed by the Office of Information Technology, Federal Software Management Support Center (FSMSC) was used to estimate BLM's potential conversion costs. This section briefly describes the FCSC model and the assumptions surrounding the parameter values input. Additional detail

FIGURE 1-1: AMS has begun work on all Concept Development Tasks

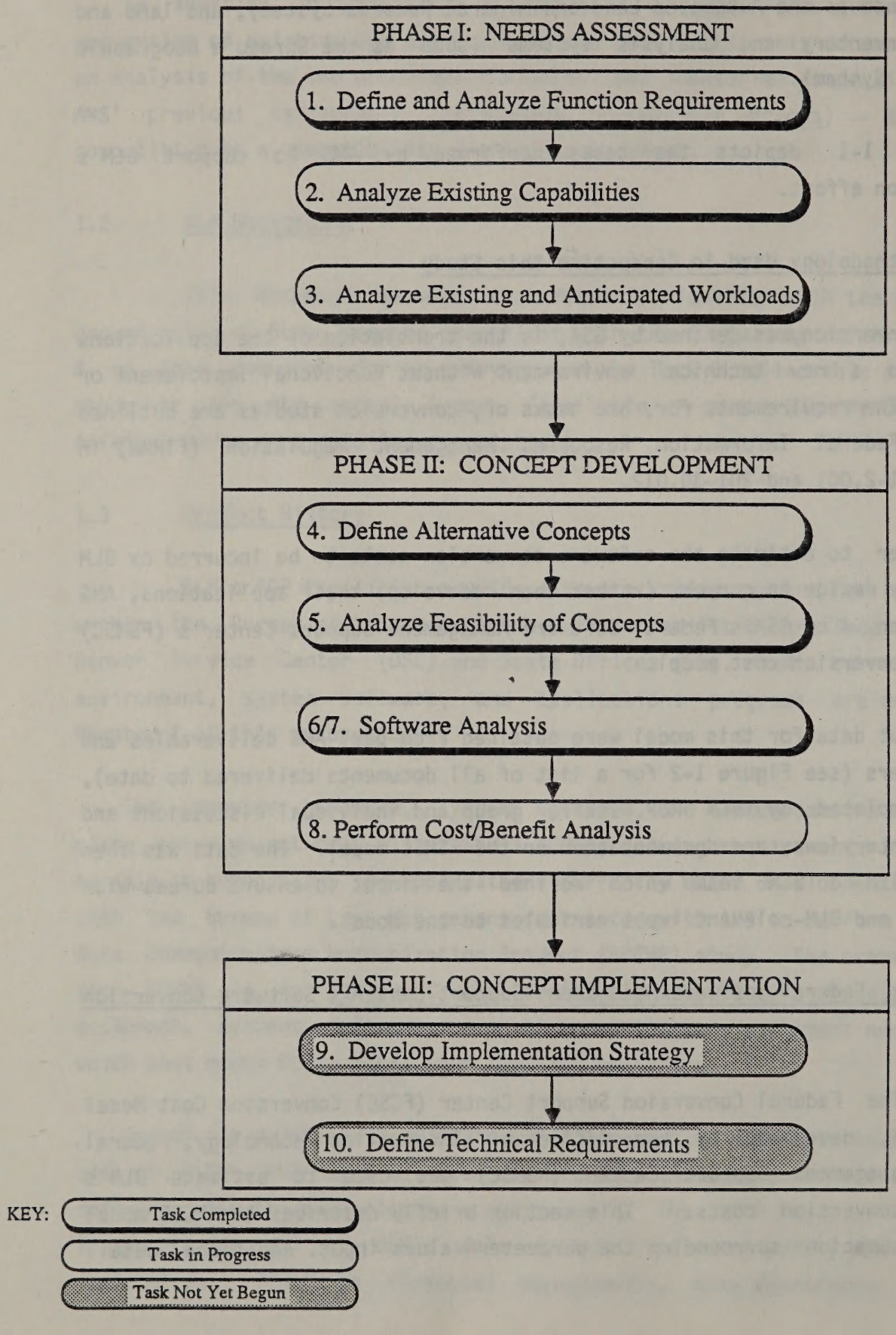

Figure 1-2
List of Deliverables and Due Dates

	DELIVERABLE		DUE DATE	STATUS
1.1	Requirements Analysis	Outline	08/23/85	Delivered
1.2	Requirements Analysis	Draft	12/13/85	Delivered
1.3	Requirements Analysis	Final	01/03/86	Delivered
1.4	Letter Report		01/03/86	Subsumed by 5.1
2.1	Existing Capabilities	Draft	01/17/86	Delivered
2.2	Existing Capabilities	Final	02/14/86	Delivered
3.1	Workload Analysis	Draft	03/28/86	Delivered
3.2	Workload Analysis	Final	04/25/86	Subsumed by 5.2
4.1	Definition of Alternative Concepts	Draft	05/30-86	Delivered
4.2	Definition of Alternative Concepts	Final	06/13/86	Delivered
5.1	Revised Task Plan		08/01/86	Deliverd
5.2	Objectives and Constraints	Draft	10/14/86	Delivered
		Briefing	10/21/86 to 10/23/86	Delivered
5.3	Implementation Considerations	Draft	10/21/86	Delivered
		Briefing	10/21/86 to 10/23/86	Delivered
5.4	Representative Technical Architectures	Briefing	04/13/87	
		Draft	04/27/87	
6/7.1	Revised Task Plan	Briefing	03/13/87	Delivered
		Draft	03/13/87	Delivered
6/7.2	Software Assessment	Briefing	04/13/87	Delivered
		Draft	05/11/87	Delivered
6/7.3	Conversion Estimates	Briefing	06/01/87	Delivered
6/7.4	Application Software Strategy	Draft	06/01/87	Delivered
8.1	Revised Task Plan	Draft	04/20/87	Delivered
		Briefing	04/20/87	
8.2	Model Technical Architectures	Draft	06/15/87	Delivered
		Briefing	06/22/87	
8.3	Analysis and Recommendations	Draft	07/13/87	
		Briefing	07/13/87	
9.1	Revised Task Plan	Draft	06/01/87	
		Briefing	06/01/87	
9.2	Overall Action Plan	Draft	07/27/87	
		Briefing	07/27/87	
		Final	09/17/87	
9.3	Detailed Plan for Representative Task	Draft	08/17/87	
		Briefing	08/17/87	
10.1	Revised Task Plan	Draft	06/01/87	
		Briefing	06/01/87	
10.2 to 10.X	Technical Specifications for RFP(s)	Draft(s)	08/03/87 to 09/14/87	

about the FCSC Conversion Cost Model can be found in the Conversion Cost Model (Version 4) - Cost Model Handbook, Report OIT/FSMC-86/001.

1.4.1.1 FSCS Model Description

The FCSC Conversion Cost Model estimates conversion costs for three main areas:

- Staff resources;
- Machine resources; and
- Miscellaneous resources.

For each area, the model uses a set of baseline conversion tasks. The conversion tasks used to estimate BLM's conversion costs are:

- Conversion Planning and Analysis
- Work Package Identification and Preparation
- Test Data Generation and Validation
- Application Program and System Software Conversion
- Data File and Data Base Conversion
- Operation Control Language Conversion
- Redocumentation
- System Testing
- Acceptance Testing
- Conversion Management/Contract Administration and Support

Section 4.2, Conversion Tasks, contains a description of each conversion task.

1.4.1.2 Parameter Values and Assumptions for the Conversion Model

Parameter values for the Software Conversion model were developed for each BLM ADP site using three sources: BLM responses to the Software Assessment surveys; recommended defaults or guidance based on the FSMSC user's guide for the model; and estimates based on AMS judgement, BLM experience or industry rule-of-thumb. Figure 4-1 in Chapter 4 lists each parameter under the source for determining its value.

In addition to the sources listed above, certain assumptions were applied to the parameters and the model to determine the appropriate values to be used for each location:

- **Acceptance testing for each site could be completed within an average of thirty days.**

  Based on the extensive preparation, unit testing, and system testing allowed for in the conversion process, AMS and BLM staff felt that an average of thirty days should be sufficient for acceptance testing. It was recognized that some locations may take more time and others may take less.

- **Classifying data files into only three complexity classes rather than the five available would provide sufficient detail to reflect the BLM's files.**

  For simplicity, BLM data files were classified as very simple (i.e. fixed record length), moderately complex (i.e. variable record length files), and very complex (i.e. databases). GSA's conversion model provides five complexity classes, however, based on discussions with BLM staff, we anticipated that BLM data files would be primarily simple and that five classes of data files would not be necessary. We used all five complexity classes for BLM's application code. BLM applications vary significantly in their use of machine-dependent code, directly impacting conversion effort and cost. Therefore, we needed the additional precision of five classes to accurately reflect complexity of BLM's application code.

- **All BLM's Aspen/2 databases were assumed to have simple rather than complex file structures.**

  Although ASPEN/2 has the ability to generate and use complex database structures, most of BLM's ASPEN/2 applications are simple and do not use this capability.

- **Additional space for the new equipment would be approximately 2000 square feet of conditioned space for DSC and an average of 500 square feet of conditioned space per State Office.**

  This estimate recognizes that some SOs may have sufficient space to run the new equipment in parallel with existing ADP equipment and not require additional space while others may require more than 500 square feet of additional space.

- **Site preparation would take approximately five staff days per site.**

  This is again an average staff-day estimate based on past AMS and BLM experience.

- **Training was estimated to be $134 per employee at each location except DSC.**

  This includes both conversion training for staff conducting the software conversion as well as retraining ADP users and support staff to use the new technical architecture. DSC was allotted an additional $100,000 for ADP training because DSC has proportionally more ADP staff than the State Offices as well as primary support responsibility for the majority of the ADP applications. These staff will require more extensive training.

- **BLM management overhead for the conversion effort was assumed to be 2% of the total staff days rather than the default 10%.**

  BLM chose to reduce the management overhead factor because its conversion approach allows conversion staff to learn as they go and reduce management oversite requirements in the later conversions. BLM's conversion will be a series of fourteen conversions rather than one large conversion. Since BLM plans to use a core conversion team to assist each conversion, the later conversions should require significantly less management overhead.

- **GIS software was included in only the DSC calculations.**

  Although GIS is used by many State Offices, the GIS software is very similar from SO to SO and DSC provides centralized support. During the conversion, the GIS software at DSC will be converted first and copied to the SOs where additional minor modification may be required but at a very low level of effort.

- **The number of GIS data file types (19-21) was used to estimate data conversion rather than the number of files.**

  For GIS, the number of file types more accurately reflects the conversion effort than the number of files. BLM has over a million GIS files but these files are organized into less than 25 types. The three GIS processes generate from 19 to 21 file types (i.e. Digitize - 5 to 7 file types; MOSS - 12; COS - 2). Once an approach to converting a type has been developed, files of that type at that site could be converted without analyzing each file. The conversion model assumes each file is analyzed individually. Using the GIS file count would substantially overstate the GIS conversion cost. At each SO, the GIS file type count was added to the file count to account for GIS data conversion.

These assumptions were developed and refined with a BLM committee consisting of DSC, DIRM (WO-770), and SO representatives.

1.4.2 Surveys

AMS composed a Software Assessment and Conversion Survey and issued copies to the Computer Operations and Computer Applications Divisions of the Denver Service Center (DSC) and the Information Systems Branch in each State Office and BIFC. The survey responses provided AMS with information relating to five areas:

- Application Description

  This area included questions on the programs supported by the application, the application's purpose and key products, the application's operational mode and interfaces to other systems, and plans for improvement.

- Documentation and Testing

  This area included questions on test data availability and the amount and quality of documentation available for the application.

- Input, Output, and Data Storage Summary

  This area included questions such as the method and amount of data input into the application, where and how often output is generated, the types and volume of data files used by the application, and data security requirements.

- Application Code Summary

  For this area, the respondents listed the total lines of Honeywell's Job Control Language (JCL) and the number of programs, the number of lines of code, and an estimate of the conversion complexity (e.g., complexity would be rated very high if the application code made extensive use of languages unique to the current environment so that little of the existing code would be transportable to the new technical environment) for each language used in the applications programs (e.g., COBOL, ASPEN/2).

- Systems Utilities, Software, and Special Equipment

  The questions in this area dealt with the types of systems utilities and software accessed by the application, how the data is input (keyed, digitized, etc.), and if the application required the use of any special equipment (e.g., optical character readers, etc).

1.4.3 Assumptions and Constraints

The following assumptions are being made for the BLM ADP conversion:

- The Fortran 66 and Cobol 64 applications will be upgraded to ANSI FORTRAN 77 and ANSI COBOL 74 prior to conversion.

- Honeywell and GIS computers will be replaced as a result of the Modernization Procurement effort. Other special-purpose computers will not be replaced.

- The future architecture will support a maximum of two versions of COBOL and FORTRAN - COBOL 74 and FORTRAN 77 which all COBOL and FORTRAN programs will be upgraded to prior to conversion, and the next releases of COBOL and FORTRAN.

- The conversion effort will make maximum use of existing BLM ADP support staff.

- The target environment will be, at a minimum, of comparable capacity to existing facilities. In addition, there will be storage capabilities for projected data growth.

1.4.4 Staff for the Conversion Effort

As mentioned above, BLM's conversion will be a series of fourteen conversions rather than one large conversion. For this purpose, BLM will form eight to ten man Intersite Conversion (IC) teams from a core of approximately 25 senior, highly-trained staff. These IC teams will be joined by from one to three individuals (depending on site size) from the site being converted and at least one individual from the next site to be converted. The IC teams will be based out of DSC. The role and composition of the IC teams will be explained more fully in Task 9, the Implementation Plan.

For the purpose of estimating conversion staff cost at each site, AMS and BLM agreed to use the standard workmonth for Budget Subactivity 4420 (the subactivity most likely to fund the conversion effort) for that site multiplied by ten workmonths. This is consistent with BLM's standard planning and budgeting process. This value was used for each conversion task as the average annual staff cost for that site.

1.5 Organization of this Document

The Conversion Software Study is organized as follows:

- **Chapter 1 Introduction:** Chapter 1 provides an overview of this document and the ADEMP study and discusses the assumptions and methodology used in developing this document.

- **Chapter 2 Current BLM Facility Environments:** Chapter 2 describes BLM's current hardware environment, system software, and application programs for DSC, the SOs, and BIFC.

- **Chapter 3 Target Environment:** Chapter 3 describes the target environment (e.g., disk drive, tape drive, CPU, and printer requirements) for purposes of estimating conversion costs and conversion schedules. This chapter

does not attempt to fully define BLM's target environment requirements. This will be performed by AMS during a subsequent task.

- **Chapter 4 Conversion Cost Estimation:** Chapter 4 describes the Federal Conversion Support Center Conversion Cost Model which was used to estimate the software conversion costs for DSC, the SOs, and BIFC. An explanation of the model's algorithms and the default values and assumptions used for BLM are provided.

- **Chapter 5 Summary of Findings:** Chapter 5 presents a brief overview of the results obtained from the conversion model for each of the twelve State Offices, DSC, and BIFC.

- **Chapter 6 Procurement Alternatives:** Chapter 6 provides a brief description of BLM's procurement history for computer systems and analyzes the risks and benefits of the two procurement alternatives -- fully competitive procurement and compatibility limited procurement.

- **Chapter 7 Schedules:** Chapter 7 presents a tentative procurement and conversion schedule as well as a detailed listing of conversion milestones to be taken into consideration.

2. CURRENT BLM FACILITY ENVIRONMENTS

2.1 Introduction

This chapter presents a description of BLM's existing ADP environment. Sections 2.2 and 2.3, respectively, provide overviews of the Denver Service Center's (DSC) and the State Office's current operating environments and system inventories. The purpose of this chapter is to provide the reader with an overview of where BLM is now with respect to their ADP environment.

2.2 Denver Service Center

Three of BLM's sixteen computer facilities are located at the Denver Service Center. DSC provides BLM with a central data processing capability for development, maintenance, and support of Bureau-wide applications. In addition, DSC provides maintenance and support of certain applications shared by all the Bureaus within the Department of Interior (DOI) in the attempt to reduce the investment in redundant systems across the Bureaus.

2.2.1 Operating Environment

2.2.1.1 Users

AMS has defined an ADP user to be any BLM staff or user of BLM data (e.g., the public, private industry, other agencies, state governments) whose primary role is outside of the ADP infrastructure but relies on products of the ADP infrastructure to perform their mission[1]. BLM users range from senior management in the Washington Office to support staff at the Resource level.

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[1] For additional detail, see AMS' Task 5.2 deliverable, Discussion of Objectives, Constraints, and Implementation Considerations, Chapter 3.

The majority of BLM's ADP users are resource specialists. Though they are highly educated in the area of land and mineral management, the level of "computer literacy" among them is very uneven.

DSC's computer system is used for administrative support and for Field Office program applications. Field staff tend to use small tracking systems and computational models. These applications are supported by DSC and State Office staff.

In addition to BLM staff, other Federal agencies (e.g., the Forest Service), private industries, ecological groups (e.g., the Sierra Club), and state and local governments access BLM's computer systems for land and mineral, and record information.

2.2.1.2 Facilities

The Denver Service Center computer facility currently occupies 7,250 square feet of space on the ground floor. The facility has special air conditioning and raised flooring. The electrical power is conditioned. By the end of fiscal year 1987, DSC will have uninterrupted power for its computer facility. Necessary safeguards for the facility include secured exits, independent fire alarms for the computer room, a halon fire deterrence system, and water backup to the halon for the communications and tape equipment.

2.2.1.3 Processing Modes

DSC supports timeshare, batch, and online processing modes. Figures 2-1 (a) and (b) identifies the number of applications supported by the various processing modes.

2.2.1.4 DSC ADP Standards

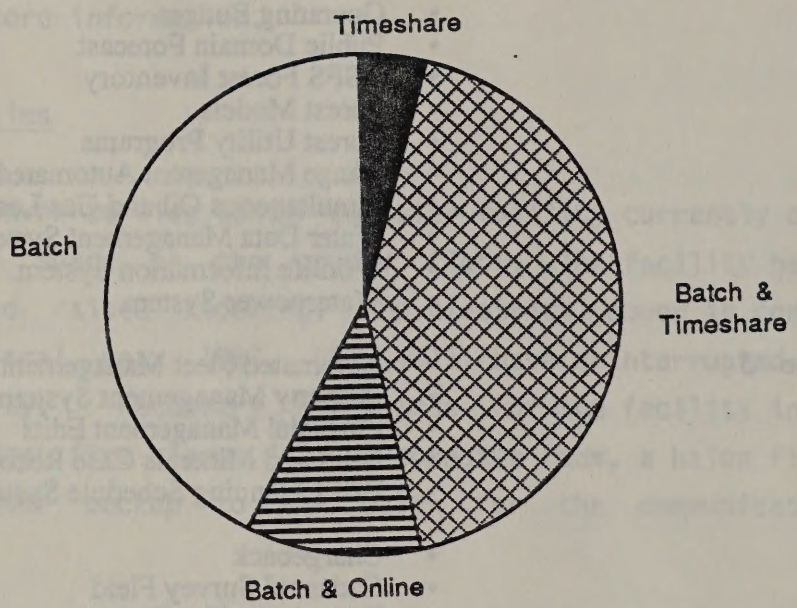
DSC has developed and implemented standards for naming conventions, instruction set restrictions, coding, and documentation (See Computer Applications Handbook, H-1262-2) for FORTRAN and COBOL applications.

Figure 2-1(a)
Most DSC Applications are Run Either in Batch or in a Combination of Batch and Timeshare Processing Modes

Processing Mode	Application Name
Timeshare - 2	• Budget Matrix • Sage Ram-Rangeland Investment
Batch & Timeshare - 19	• Aviation Contract Monitoring • Wildfire Reporting System • Data Element Dictionary • Aging of Accounts Receivable • Adopt-A-Horse • Inventory Data System (IDS) • Mining Claim and Recordation • Auto Management by Objectives System • Material Sales • Operating Budget • Public Domain Forecast • USFS Forest Inventory • Forest Models • Forest Utility Programs • Range Managemnt Automated System (RMAS) • Simultaneous Oil and Gas Leasing System • Water Data Management System • Wildlife Information System • Waterpower System
Batch & Online - 5	• Automated Fleet Management System • Property Management System • Financial Management Edits • Land and Minerals Case Recordation System • BLM Planning Schedule System
Batch - 19	• Chargeback • Cadastral Survey Field • Emergency Fire Fighter • Perpetual Inventory • Payroll/Personnel • Checks to Treasury • Deposits-in-Transit • Fire Cost Reports (FCR) • General Ledger System • Imprest Fund • Reimbursable Billing • Financial Management Reports • Travel Advance System • Financial Management Year-End Processing System • Job Documentation Reporting • Lease Management • Program Management • Summer Hire System • Solid Leasable Minerals System

Figure 2-1(b)

Most DSC Applications are Run Either in Batch or in a Combination of Batch and Timeshare Processing Modes



Ninety-percent of BLM's application code is written in one of these two languages. However, the existing documentation was rated as weak by the DSC support staff (averaging 4.2 on a 10 point scale). Much of this is due to the fact that many of the applications are old and existed before the ADP standards were developed.

2.2.1.5 Privacy and Security

There are no unusual physical facility or system security requirements beyond traditional computer facility security (e.g., secured entrances). As illustrated by Figure 2-2, over half of BLM's applications require only "data access control" level security. However, the data security requirements for DSC applications span the entire range of security levels. Five levels of security were considered:

- **Data Encryption:** Encryption of data is required for such items as oil field production and royalty information to prevent financial or legal consequences for BLM.

- **Sensitive Data:** Sensitive data is private or proprietary data such as oil/gas well log production data or BLM internal planning information that could result in financial loss or legal risk to BLM but on a lesser scale than data requiring encryption.

- **Controlled Data Access:** Controlled data access is required for data that should be viewed and changed only by a select group but poses little risk if compromised.

- **No Special Security Needs:** Data can be accessed and changed by anyone with password access to the computer account.

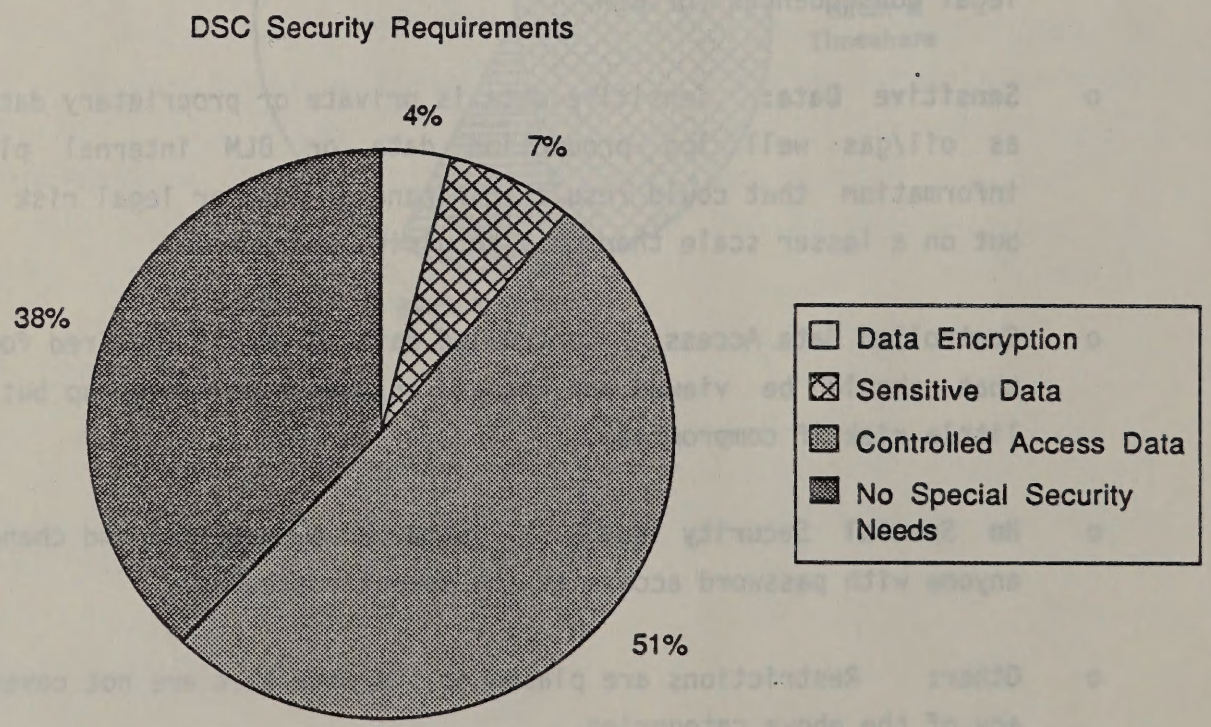
- **Other:** Restrictions are placed on the data that are not covered by any of the above categories.

The current DSC security and privacy requirements fall into one of the first four categories listed above. In the software assessment survey responses, there were no applications for which "other" security needs were specified.

Figure 2-2

The Majority of DSC Applications Requires Data Access Control Level Security

CLASS	DESCRIPTION	PERCENTAGE
5	Data Encryption	4
4	Sensitive Data	7
3	Controlled Access Data	51
2	No Special Security Needs	38



2.2.2 Current System Inventory

2.2.2.1 Hardware Configuration

BLM's Denver Service Center contains the largest concentration of ADP resources in the Bureau. In all, DSC operates seven major computer system configurations (as illustrated in Figure 2-3):

- **A multi-processor Honeywell DPS-8/70 mainframe** -- operated by the Division of Computer Operations and used to support BLM-wide application systems and for general ADP timesharing.

- **A Honeywell Level 6 minicomputer** -- also operated by the Division of Computer Operations and used to develop software for BLM's State Offices.

- **A Data General Eclipse C-330 and a Hewlett-Packard 3000 with an array processor** -- operated by the Division of Advanced Data Technology for the development of BLM's Geographical Information System (GIS) and data image analysis.

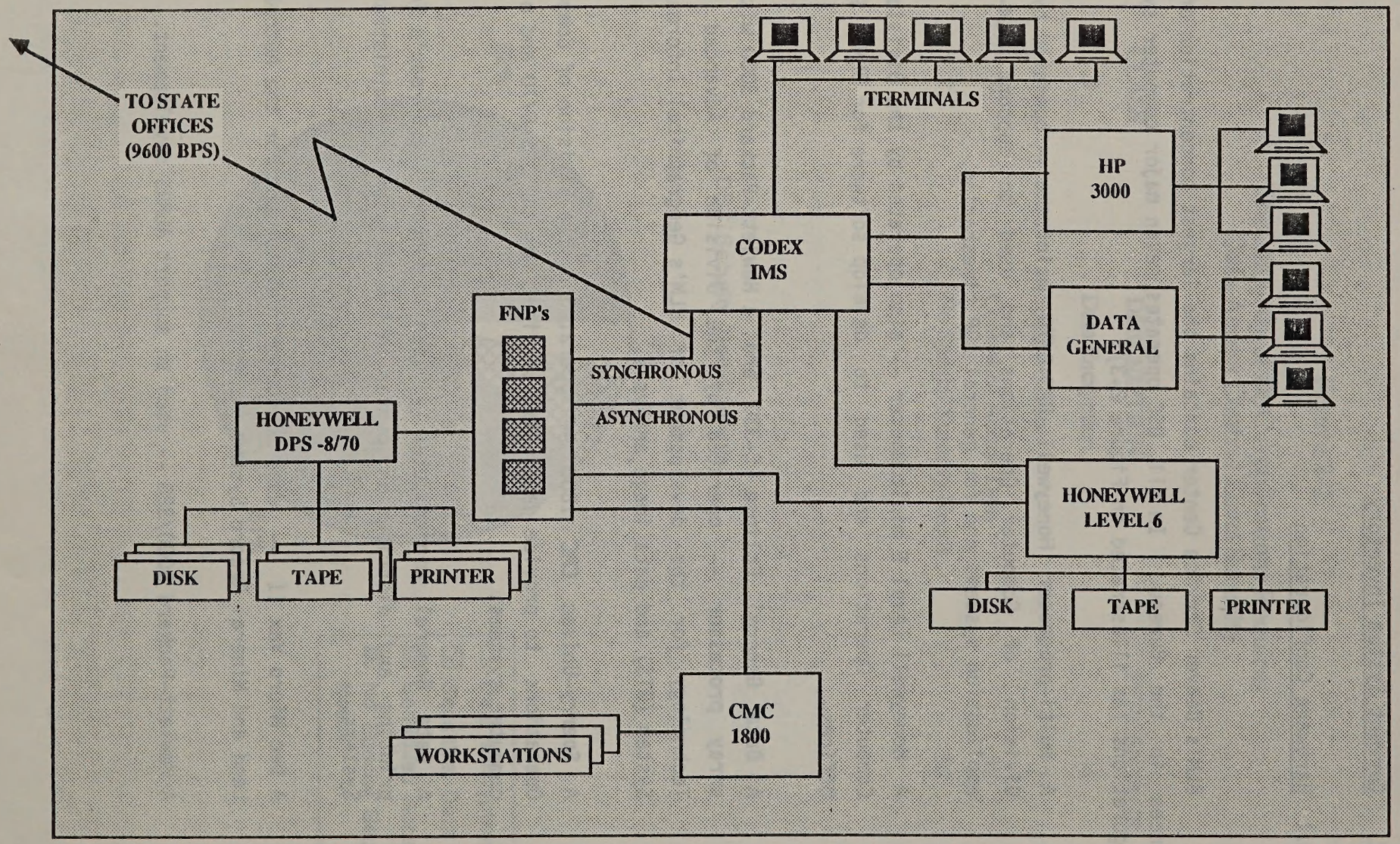
- **A Sperry-Univac CMC 1800** -- operated by the Division of Computer Operations to provide data entry services for the DPS-8/70 and other computer systems.

- **A Data General minicomputer** -- used to support the Bureau's forms printing and distribution center in the Division of Administrative Systems.

- **A Dec Micro Vax II** -- used to support development for the Automated Land and Mineral Record System (ALMRS).

- **A Hewlett-Packard 9000/320** -- used to support ALMRS development.

FIGURE 2-3
Overview of Denver Service Center ADP Network



The computer systems and peripherals at the Denver Service Center are connected through a series of local linkages. First, many of the terminals at DSC are tied to the Intelligent Matrix Switch (IMS), a communications device that provides access to the DPS-8/70 and Level 6. The IMS also provides the potential for communications between computers: installation of the appropriate protocol converters on computers tied to the IMS would provide for communications between computers which are not currently "communicating". Second, the DPS-8/70 and Level 6 are tied directly to each other by a synchronous line using Honeywell's General Remote Terminal Supervisor (GRTS) telecommunications package. GRTS provides terminal concentration, file transfer, and batch remote job entry input and output. In general, this means that any terminal directly connected to the Level 6 can access the DPS-8/70 as if it were directly connected.

Externally, the DPS-8/70 is linked to the Honeywell Level 6 computer systems in each of BLM's twelve State Offices and the Boise Interagency Fire Center. These connections also use synchronous lines and GRTS software.

The major hardware components of BLM's ADP inventory at the Denver Service Center are identified in Appendix A. For each component, the supplier name, model number, and quantity of each type of unit are provided. The major components are: central processing units, disk drives and storage, tape drives, terminals, personal computers, and other peripherals.

2.2.2.2 Systems Software

2.2.2.2.1 Operating Systems

The Honeywell DPS-8/70 uses Honeywell's GCOS III (Version 4JS3, October 85 update) operating system. The Honeywell Level 6 uses Honeywell's GCOS-6 (Mod.400, Release 3.1) operating system.

2.2.2.2.2 Compilers

The DSC Honeywell DPS-8/70 has a total of five compilers: FORTRAN IV, FORTRAN 77, COBOL-68, COBOL-74, and PASCAL. The DSC Honeywell

Level 6 has compilers for FORTRAN, BASIC, and COBOL, in addition to the GMAP (GCOS-6 Macro Assembler Program) assembler. (See Figure 2-4 for purchase/lease and price information.)

As mentioned above, BLM currently has two versions of COBOL -- COBOL-68 and COBOL-74. BLM is considering plans to convert all of their COBOL-68 code to COBOL-74 during 1988. Therefore, at the time of conversion, BLM will only require one COBOL compiler though the new architecture will support both the COBOL-74 version and any new version released after the COBOL-74 version.

2.2.2.2.3 Proprietary Software Packages

Figure 2-4 lists all of the proprietary software packages used at DSC. For each package, the following information is provided:

- o Name of the Package;
- o Supplier;
- o Owned vs. Leased; and
- o Price.

2.2.2.2.4 Data Base Management Systems

DSC supports two data base management systems: ASPEN/2 and DM-IV. ASPEN/2, running on the DPS-8/70 is used frequently. Both DSC systems personnel and non-ADP specialists in the field use ASPEN/2 to develop software for a wide range of systems in administration, technical services, energy and minerals, lands, and renewable resources. Some DPS-8/70 applications also use DM-IV, a Honeywell DBMS package, for on-line processing. (See Figure 2-4 for purchase/lease and price information.)

2.2.2.3 Application Software

2.2.2.3.1 Application Programs

Figure 2-5 contains an inventory of the DPS-8/70 application

Figure 2-4
DSC Leases the Majority of its Proprietary Software Packages

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-III	4JS3,10/85 Update	Honeywell	Lease	N/A
GCOS-6	Mod400,3	Honeywell	Lease	$ 2,556/yr
COBOL 68	CZ 2.0	Honeywell	Lease	$ 3,672/yr
COBOL 74	CB 4.3	Honeywell	Lease	$1,404/yr
FORTRAN IV	FT 2.1	Honeywell	Lease	$ 4,248/yr
FORTRAN 77	FZ 3.1	Honeywell	Lease	$ 2,556/yr
BASIC (Compiler)	4.0	Honeywell	Lease	$ 408/yr
BASIC (Interpreter)	4.0	Honeywell	Lease	$ 804/yr
DM-6	2.00	Honeywell	Lease	$ 4,476/yr
ASPEN/2	191	Tekton	Lease	$ 6,300/yr
INFO	9.24	Henco	Own	$10,000
SPSS	H-66	SPSS	Own	$ 5,000
UPF	3.1	Honeywell	Lease	Bundled
DEF	3.0	Honeywell	Lease	$ 648/yr
DM-6 TP	2.0	Honeywell	Lease	$ 2,784/yr
SCREENWRIT	3.6	Honeywell	Lease	$ 1,008/yr
SORT/MERGE	4.3	Honeywell	Lease	$ 312/yr

Figure 2-5
DSC Application Programs are Written in a Variety of Programming Languages

Language	Number of Programs	Number of Lines of Code	Complexity Class
ASPEN/2	134	19,080	1
ASPEN/2	35	2,840	2
ASPEN/2	3	400	3
ASPEN/2	24	1,500	4
ASPEN/2	8	2,700	5
BASIC	15	10,000	3
CKCIN	10	200	1
COBOL	15	15,000	1
COBOL	185	239,298	2
COBOL	417	492,012	3
COBOL	151	182,098	4
COBOL	70	50,525	5
DEF II	4	300	3
DM-IV	12	7,000	1
DM-IV	44	46,100	2
FORTRAN	11	71,000	1
FORTRAN	7	616	2
FORTRAN	306	209,424	3
FORTRAN	326	291,5404	
TEX	42	2,340	1
TEX	11	10,200	2
TEX	12	600	3

programs to be converted. The following information is provided by language:

- Total Number of Programs by Language;
- Total Lines of Code by Language; and
- Complexity Class of Code.

The classification scheme used by FSCS to categorize the complexity of the application code with respect to converting it to a new target environment uses a rating system from one to five. Code complexity is one of the parameters entered into the FSMSC Software Conversion Model described in Chapter 1. The significant factors in determining conversion complexity are the characteristics of the programs which will be affected by the differences between the source and target environments. The five classes of conversion complexity are defined as application programs and system software eligible for:

- Complexity Class 1: Reprogramming

  Programs falling into this class make extensive use of programming language capabilities or features unique to the current environment such that little of the existing code would be transferable to the new technical environment.

- Complexity Class 2: Major Program Logic Modification

  Programs falling into this class are sensitive to the current environment and make use of certain equipment or operating system features which may not be available in the new environment.

- Complexity Class 3: Minor Program Logic Modification

  Programs falling into this class require minor modification for conversion but the overall program logic will not be affected.

- Complexity Class 4: Simple Syntax Translation

  Programs falling into this class require only simple syntax translation.

- Complexity Class 5: Software Transference

  Programs falling into this class require only transfer and recompilation or relinking in the new environment.

As illustrated in Figure 2-6, most of the ASPEN/2 code is Class 1 and must be rewritten, while most of the COBOL and FORTRAN code will probably be converted.

2.2.2.3.2 Operating Control Language

The operating control language used at DSC is Honeywell's Job Control Language (JCL). The total number of job streams (i.e., activities) is 2,056. The total number of lines of JCL is 31,890.

2.2.2.3.3 Data Files

For data files, the FSCS model uses a classification scheme similar to the one used for application code, where values range from complex (A) to simple (E). For simplicity of analysis, BLM staff classified existing data files as belonging to Complexity Class A, C, or E.

Figure 2-7 contains a summary of the data files to be converted. As the Figure illustrates, DSC files are heavily concentrated on both disk devices and tapes. For each device (e.g., disk pack, 800/1600 BPI 9-track tape drive), the following information is provided:

- Number of Files;
- Number of Fixed Length Records;
- Number of Variable Length Records; and
- Number of Megabytes (ASCII).

Figure 2-6

Most ASPEN/2 Code is of Complexity Class 1 and Will Require Reprogramming

CLASS	DESCRIPTION	PERCENTAGE
1	Reprogramming	72
2	Major Program Logic Modification	11
3	Minor Program Logic Modification	17

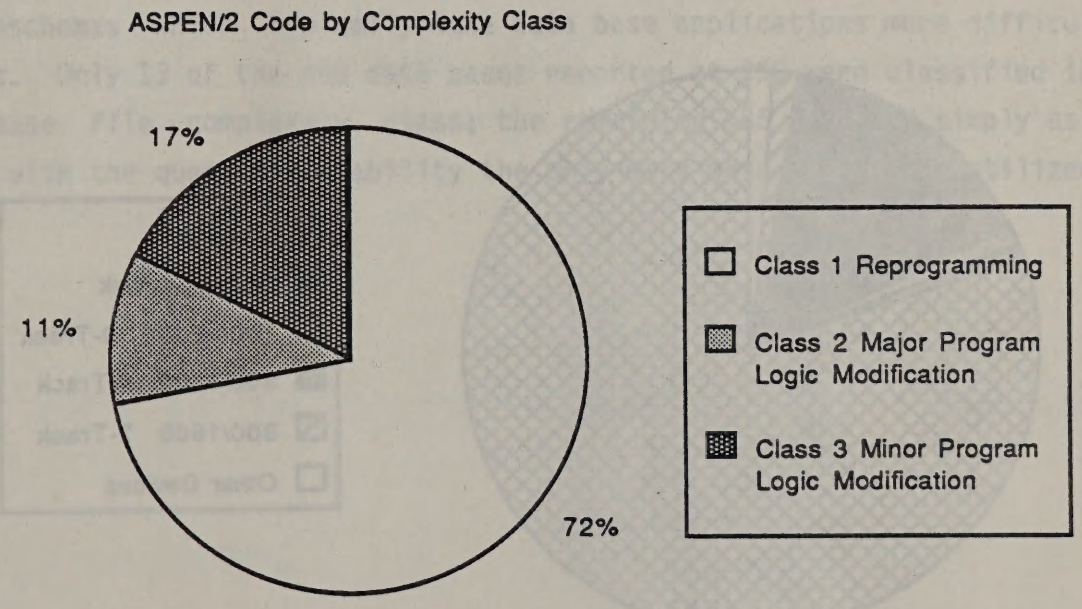
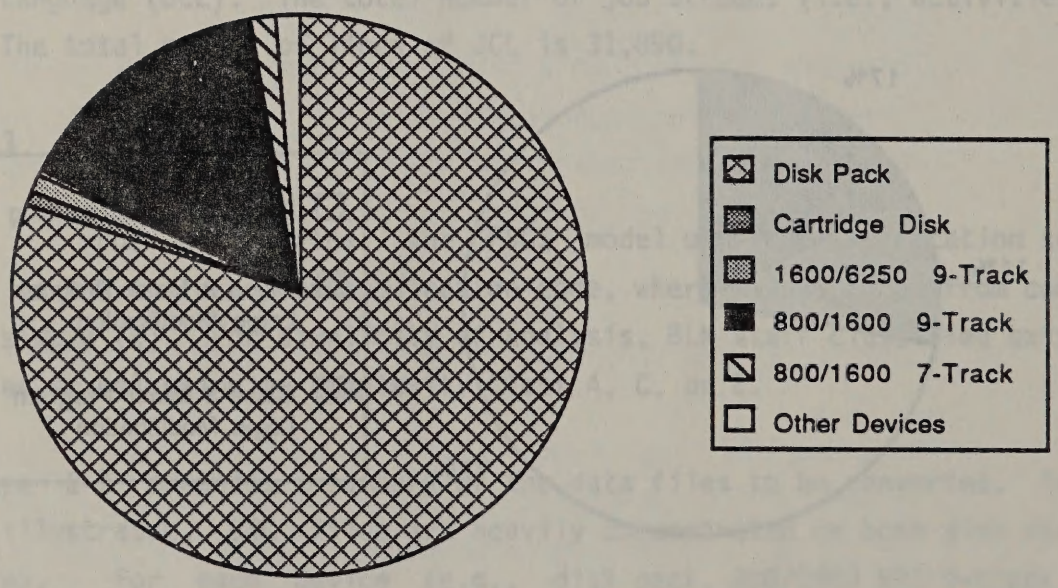


Figure 2-7
Most of DSC 's Data Files are on Disk Pack

Device	Number of Files	Number of Fixed Length Records	Number of Variable Length Records	Number of Megabytes (ASCII)
Disk Pack	2,670	2,594	76	7,090
Cartridge Disk	22	22	0	2,560
1600/6250 9-Track	35	35	0	2,368
800/1600 9-Track	502	490	12	10,419
800/1600 7-Track	44	44	0	10
Other Devices	42	42	0	1,047
	3,315			23,494



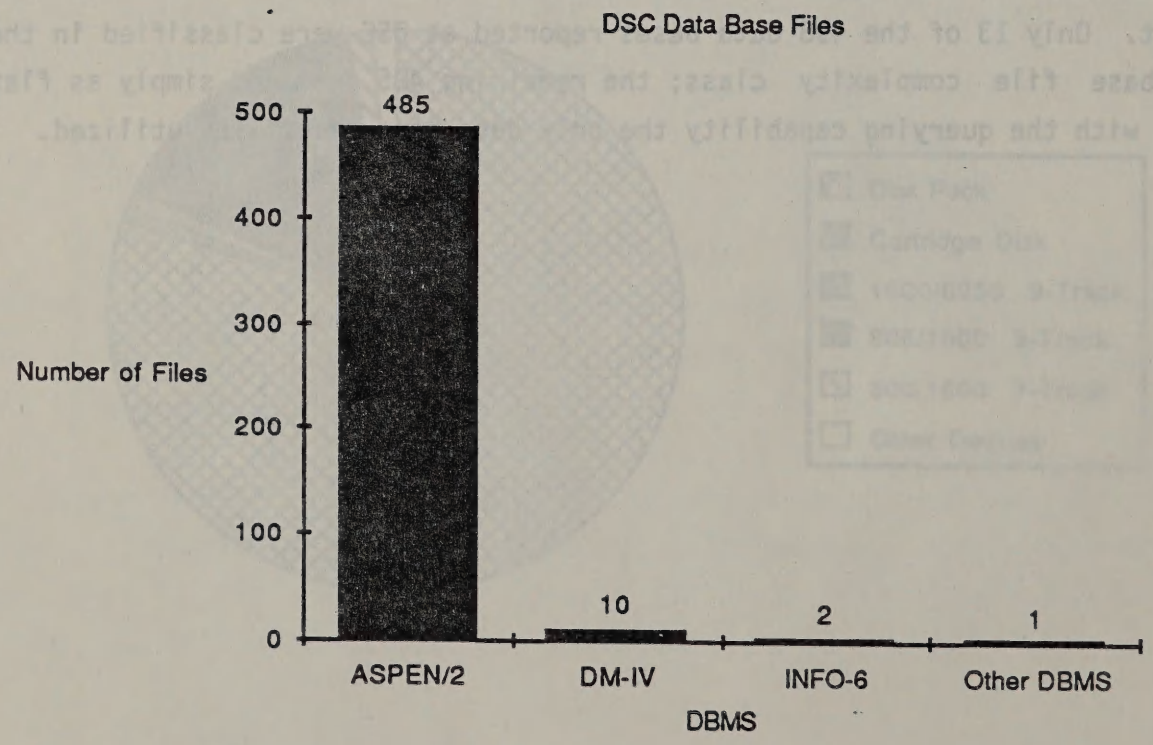
Fixed length records are records that are defined as a specific length (e.g., 4 bytes) regardless of the size of the data being stored. That is, a maximum amount of storage space is allotted to each record regardless of whether the data in all records will "fill" the entire amount of space. Variable length records are records whose length is determined by the data being stored. A differentiation is made since variable length records are more difficult to convert. EBCDIC file data volumes were converted to ASCII-comparable volumes for comparison and summary.

2.2.2.3.4 Data Bases

Figure 2-8 identifies the number and type of data base files to be converted. The data base files are stored on disk. Although data base management systems are used extensively at DSC, most of the data base applications, particularly those developed by the users, are designed and used as if they were flat file applications. They do not use multiple record types or subschemas which typically make data base applications more difficult to convert. Only 13 of the 498 data bases reported at DSC were classified in the data base file complexity class; the remaining 485 are used simply as flat files, with the querying capability the only data base capability utilized.

Figure 2-8
The Majority of DSC's Data Base Files are in ASPEN/2

DBMS	Number of Data Base Files
DM-IV	10
INFO-6	2
ASPEN/2	485
Other DBMS	1



2.3 State Office Facilities

Each of BLM's twelve State Offices and the Boise Interagency Fire Center have computing facilities. These facilities are "connected" to DSC (and subsequently to each other) through a communications network.

2.3.1 Operating Environment

2.3.1.1 Users

State Office system users consist largely of the bureau personnel within that State Office (and its associated District and Resource Area Offices). The States provide some Bureau-wide applications, such as the Oregon Recordation and Case Administration (ORCA) and Declining Deposits Accounts (DDA) systems, to process State-specific data. The user mix is similar to that of DSC.

In the future, the State Office facilities would like to provide on-line access (e.g., to ALMRS) to the public. Currently, only a few of the State Offices provide system access to the public, and that access is restricted to specific applications, such as ORCA in the Montana State Office.

2.3.1.2 Facilities

Figure 2-9 summarizes the characteristics of the State Office computer facilities.

2.3.1.3 Processing Modes

The State Office facilities support both online and batch processing modes. Figures 2-10 (a) and (b) identify the number of applications supported by the various processing modes.

2.3.1.4 State Office ADP Standards

The State Offices have various standards for naming conventions, instruction set restrictions, coding, and documentation.

Figure 2-9

SO Facilities

Characteristics / State Office	Special Air Conditioning	Flooring	Conditioned Electrical Power (UPS)	Uninterrupted Electrical Power	Independent Fire Alarms for Computer Room	Type of Fire Deterrence System	Secured Exits	Computer Room Location
Alaska	Yes	Raised	No	No	Yes	Sprinkler	Yes	5th Floor
Arizona	Yes	Raised	No		Yes	Halon	Yes	3rd Floor
BIFC	Yes	Raised	No	Yes	No	Halon	Yes	2nd Floor
California	Yes	Raised	No	No	Yes	Halon	Yes	2nd Floor
Colorado	Yes	Raised	Yes	No	Yes	Halon	Yes	2nd Floor
Eastern States	Yes	Raised	Yes	No	Yes	Halon	Yes	Ground Floor
Idaho	Yes	Raised	No	No	Yes	Halon	Yes	Ground Floor
Montana	Yes	Raised	No	No	Yes	Halon	Yes	7th Floor
Nevada	Yes	Raised	No	Yes	Yes	Halon	Yes	Ground Floor
New Mexico	Yes	Raised	No	No	No	Halon	Yes	Ground Floor
Oregon	Yes	Raised	No	No	Yes	Halon	Yes	7th Floor
Utah	Yes	Raised	No	No	Yes	Halon	Yes	4th Floor
Wyoming	Yes	Raised	No	No	Yes	Halon	Yes	5th Floor

Figure 2-10(a)
SO Processing Modes

States conduct a surprising amount of on-line processing, primarily ASPEN/2 queries

Processing Mode	Application Name
Batch & Online	• Interactive Econ I-O Comp. Program • Legal Land Description • Oil & Gas Sales Data Base • PCCS (Cadastral) • Photo Map Status • Wyoming Rangeland Investment Program • Range Management Automated System (RMAS) • SIMO/Oil & Gas • Trespass File/Memo File • Well Production • Declining Deposit Accounts • ORCA • Timber Sale Information System • Bidders List • Purchase Orders • Water Use/Rights Inventory • Litigation System • ORCA Master Support System • ORCA Supporting Programs • Warehouse Inventory System • Financial Management • Aircraft Use Information & Tracking Data Base • Billing/Charge Back • Computer Performance Evaluation • Delegation of Authority • Document Catalog System • Hardware Inventory • Keycard Tracking • Manpower Tracking Data Base • Operating Budget Data Entry System • Pay Pers Data Entry System • Parking Data Base • Stores Sytem (Warehouse) • Training Catalog/Plan System • Telephone Directory • Tape Library System • Vacancy Announcement • Workload Assignment
Online	• Cultural Resources • Case Recordation System • Casper District - Range Management Billing System

NOTE: This figure does not include data from ESO, Nevada, or New Mexico.

Figure 2-10(a)
SO Processing Modes
States conduct a surprising amount of on-line processing, primarily ASPEN/2 queries

Processing Mode	Application Name
Online (cont'd.)	• Cadastral Survey Project Status • EA Register • INC • Library Reference System • Mailing Labels • Mailing List • Property Inventory • Review Register • Safety Incident System • Vacancy Announcements • Wild Horse and Burro Tracking • Well Status Report • Completed Training • MTLIBR ASP. MTVACN. ASP • Maps • Motor Vehicle Operator • Persprop ASP • Radio ASP • REVO. ASP, CLAS. ASP • SF52 Track • Survey • Status • Timber stand • Withdrawal Review • Birds of Prey • File Catalog and Archiving System • Economic Models • Employee Development Accounts Tracking System • Forest Inventory • Land Withdrawal • Electronic Mail • Project Costs • Procurement Tracking • Resource Monitoring • Radio Inventory • Time Coding • Timber Programs • Vehicle Mileage • Water Rights • Water Rights Application Register • ALMRS

NOTE: This figure does not include data from ESO, Nevada, or New Mexico.

Figure 2-10(a)
SO Processing Modes

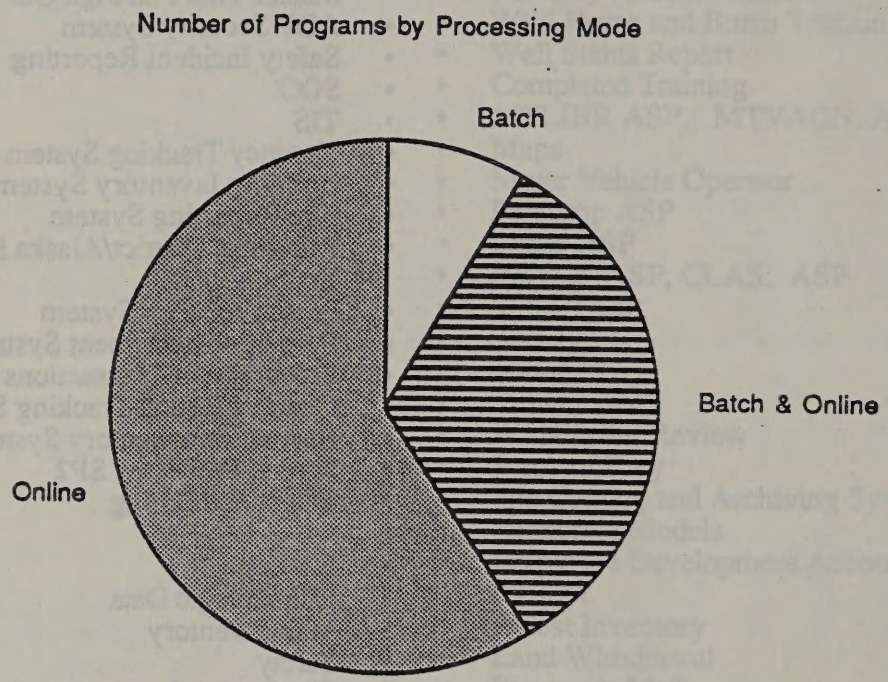
States conduct a surprising amount of on-line processing, primarily ASPEN/2 queries

Processing Mode	Application Name
Online (cont'd.)	• Age System • Assignments • Casework Management • Pending Actions • Request for Services • Surface Management • Aircraft Cost Tracking • Logistics Order Tracking • Cadastral, Mineral Survey • LLD, Status • Master Title Plat Sign Out • ADP Security System • Safety Incident Reporting • SOO • TIS • Vacancy Tracking System • Building Inventory System • Fire Reporting System • Fairbanks District/Alaska Fire Service Training • Prescribed Fire System • Property Managment System • Procurement Transactions Summary • Quarters Rental Tracking System • Recreation Inventory System • Screen Processor SP2 • Telephone Billing
Batch	• EA Log • Climatologic Data • Map Inventory • Safety • Fire Report System • Retrofit • Solid Leasable Minerals System • Procurement Obligation Tracking • Manpower Correlation Report • Software Inventory

NOTE: This figure does not include data from ESO, Nevada, or New Mexico.

Figure 2-10(b)
SO Processing Modes

States Conduct a Surprising Amount of On-Line Processing, Primarily ASPEN/2 Queries



2.3.1.5 Privacy and Security

The facility and system security requirements for the State Offices were rated using the same classification scheme identified in section 2.2.1.5. As illustrated in Figure 2-11, the data security requirements for the State Offices span the entire range of security levels. In general, there are no unusual facility or system security requirements beyond traditional computer facility security (e.g., secured entrances).

2.3.2 Current System Inventory

2.3.2.1 Hardware Configuration

Appendix A of AMS' June 1986 deliverable, Existing Capabilities for the Bureau of Land Management provides detailed configuration information for each state. For the convenience of the reader, this Appendix has been included as part of this document (see Appendix A). In the State Offices, BLM operates ADP systems provided primarily by five major manufacturers. However, there are over 20 different CPU product lines installed at the State Offices. BLM buys CPU resources from outside services as well. This mix of equipment complicates the process of providing adequate systems software, ADP staff, supporting peripherals and supplies, and telecommunications to help the users properly utilize the CPUs. In addition, the systems software operating on each CPU also varies by state (e.g., State Offices may be running different versions).

State Offices and BIFC use permanent and removable disk packs to store data, system software, and applications software. The States use over 20 models of disk drives to support their data storage requirements. All but one disk drive model are from the same vendor as the CPU they support.

2.3.2.2 Systems Software

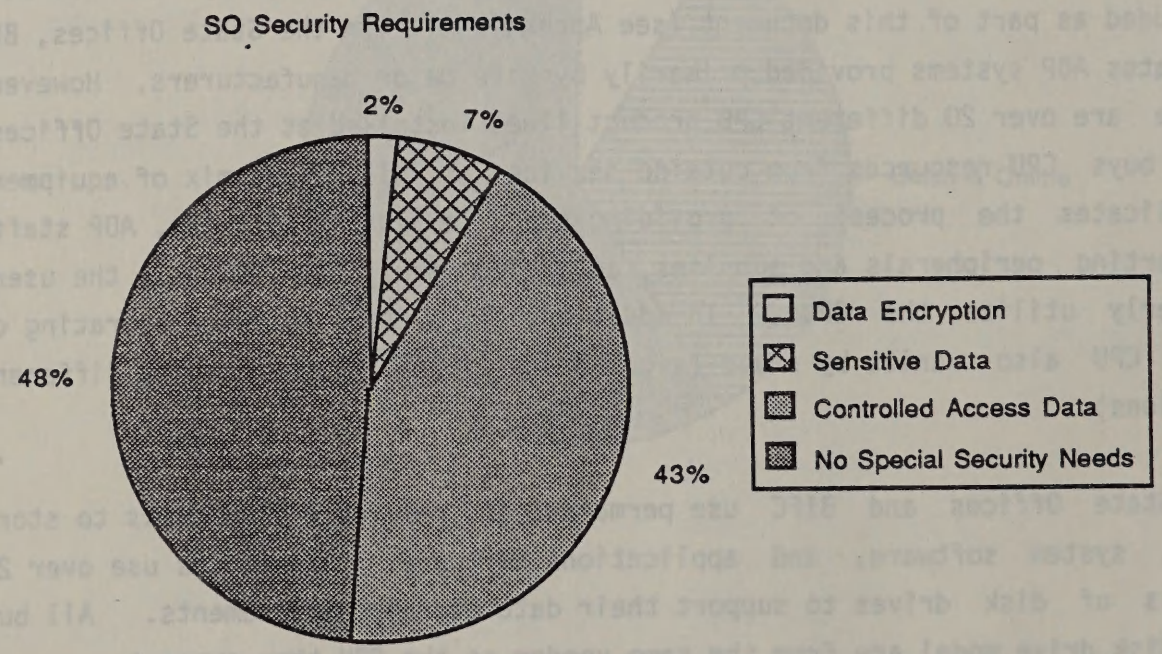
2.3.2.2.1 Operating System

All of the State Office Honeywell Level 6 systems use the GCOS-6 Mod. 400 operating system.

Figure 2-11

Most SO Applications Require Only Traditional Computer Facility Security

CLASS	DESCRIPTION	PERCENTAGE
5	Data Encryption	2
4	Sensitive Data	7
3	Controlled Access Data	43
2	No Special Security Needs	48



2.3.2.2.2 Compilers

The State Offices have a variety of compilers including: COBOL 68, COBOL 74, FORTRAN V, FORTRAN 77, PASCAL, and a BASIC Interpreter/Compiler. Most states have at least one compiler, typically COBOL 74, while a few states have more. (See Tables 1 through 13 in Appendix C for purchase/lease and price information.)

2.3.2.2.3 Proprietary Software Packages

Tables 1 through 13 in Appendix C lists all of the proprietary software packages used by the SO facilities.

2.3.2.2.4 Data Base Management Systems

INFO-6 is the primary DBMS package currently used by the State Office facilities. INFO-6 is a relational data management system and fourth generation language. Using INFO-6, a user may build files, enter and update information, perform ad hoc queries and retrievals, and create and modify reports. (See Tables 1 through 13 in Appendix C for purchase/lease and price information.)

2.3.2.3 Application Software

2.3.2.3.1 Application Programs

Figure 2-12 contains an inventory of the application programs to be converted. The classification scheme defined in section 2.2.2.3.1 is used here to rate the complexity of converting the applications to a new computing environment.

2.3.2.3.2 Operating Control Language

The operation control language used on the Honeywell Level 6s at the State Offices is Honeywell's Executive Command (EC) language. The total number of job streams (i.e., activities) is 702. The total number of lines

Figure 2-12
Many SO Application Programs are of Complexity Class 3

	COMPLEXITY CLASS									
LANGUAGE	1		2		3		4		5	
	PGMS	LOC	PGMS	LOC	PGMS	LOC	PGMS	LOC	PGMS	LOC
COBOL	77	20,212	694	390,828	562	576,727	81	57,110	23	10;166
EDITOR	--	--	--	--	3	150	--	--	--	--
FORTRAN	4	1,428	--	--	72	13,300	169	40,000	--	--
INFO	--	--	200	12,559	26	338	10	500	--	--
INFO-9.24	--	--	3	100	--	--	--	--	--	--
MAR	1	20	--	--	--	--	--	--	--	--

LEGEND

1 - REPROGRAMMING

2 - MAJOR PROGRAM LOGIC MODIFICATION

3 - MINOR PROGRAM LOGIC MODIFICATION

4 - SIMPLE SYNTAX TRANSLATION

5 - SOFTWARE TRANSFERENCE

NOTE: This figure does not include data from ESO, Nevada, or New Mexico.

of ECs is 21,143. ECs are similar to JCL activities -- the instructions go directly to the processor.

2.3.2.3.3 Data Files

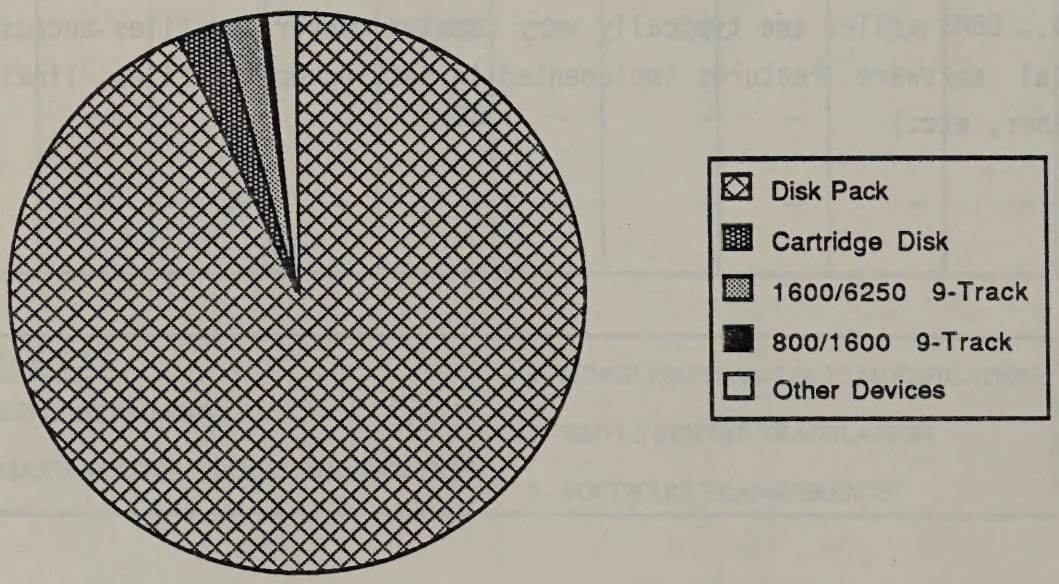
Figure 2-13 contains a summary of the data files to be converted.

2.3.2.3.4 Data Bases

Figure 2-14 identifies the number and type of data base files to be converted. The data base files are stored on disk. The SO data base applications tend to use their data bases as if they were flat files, much like they do at DSC, making these applications and files easier to convert than most DBMS applications which generally make use of multiple record types and subschemas. (According to GSA's guidelines for the FSMSC conversion cost model, DBMS files are typically very complex conversion files because of the special software features implemented in setting up the files, linking files together, etc.)

Figure 2-13
Most of the SO Data Files are Stored on Disk Packs

Device	Number of Files	Number of Fixed Length Records	Number of Variable Length Records	Number of Megabytes (ASCII)
Disk Pack	8,853	8,763	90	1,146
Cartridge Disk	251	1	250	335
1600/6250 9-Track	213	213	0	262
800/1600 9-Track	12	12	0	4
Other Devices	148	148	0	39

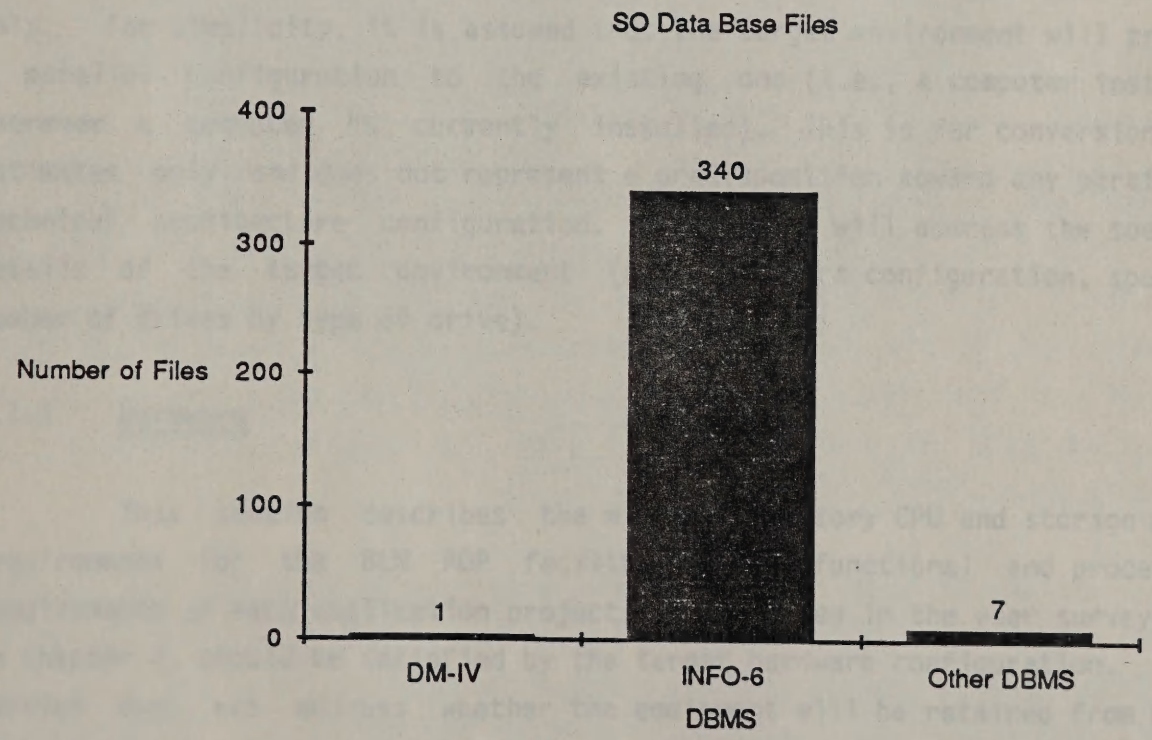


NOTE: This figure does not include data from ESO, Nevada, or New Mexico.

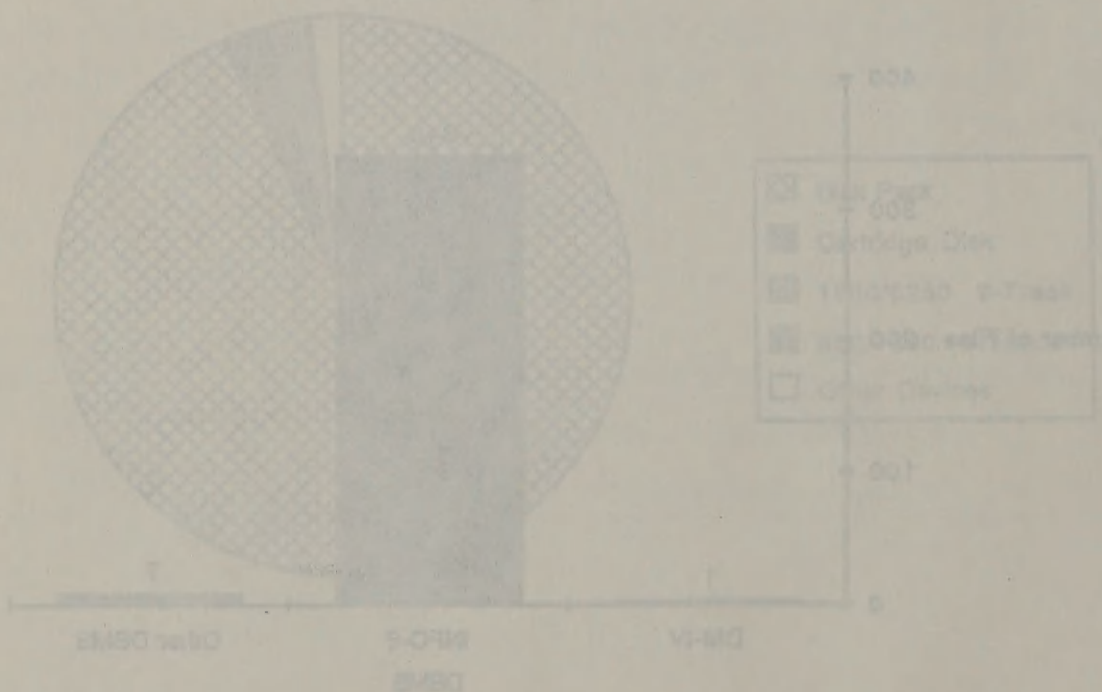
Figure 2-14

Many SO Data Base Files are in INFO-6

DBMS	Number of Data Base Files
DM-IV	1
INFO-6	340
Other DBMS	7



NOTE: This figure does not include data from ESO, Nevada, or New Mexico.



3. TARGET ENVIRONMENT

3.1 Introduction

This section of the Conversion Study describes the data processing requirements which need to be supported by the target environment. The requirements are described in terms of the following components:

- Hardware;
- System Software and Utilities; and
- Data Files/Data Base Files.

These requirements are used to estimate the conversion cost and schedule only. For simplicity, it is assumed that the target environment will provide a parallel configuration to the existing one (i.e., a computer installed wherever a computer is currently installed). This is for conversion cost estimates only and does not represent a predisposition toward any particular technical architecture configuration. Later tasks will address the specific details of the target environment (e.g., hardware configuration, specific number of drives by type of drive).

3.1.1 Hardware

This section describes the minimum mandatory CPU and storage media requirements for the BLM ADP facility. All functional and processing requirements of each application project, as described in the user surveys and in Chapter 4, should be satisfied by the target hardware configuration. This section does not address whether the equipment will be retained from BLM's current inventory or procured prior to the conversion effort. Instead, the focus is on the capabilities which must be present for the conversion to be successful, regardless of their source.

3.1.1.1 Current Hardware Requirements

BLM is currently supported by computer systems installed at the Denver Service Center, the Boise Interagency Fire Center, and the twelve (12) State Offices.

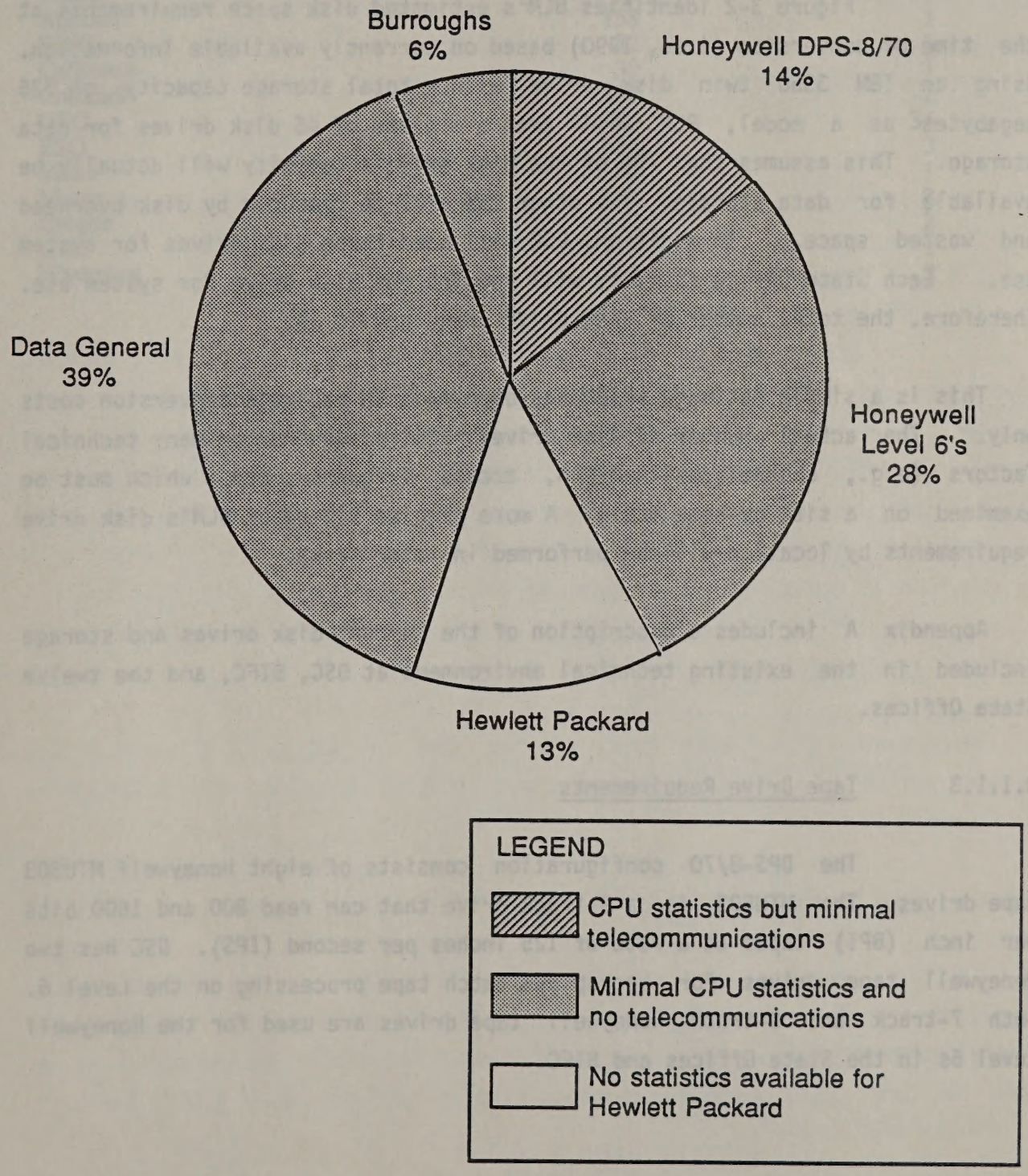
The Denver Service Center utilizes a DPS-8/70 computer system. It is composed of two Honeywell 8/70 processors. Each processor has approximately 1.7 MIPS (millions of instructions per second). The DPS-8/70 has two million 36-bit words of internal memory. Two million words of memory is roughly equivalent to eight to twelve million bytes of memory on a byte-oriented machine, such as a VAX or IBM 3081 system.

The DSC also has a Honeywell Level 6 system, initially configured as a Model 43 processor, with a MIPS rating of 0.5. It was later upgraded to a Model 57 with a MIPS rating of 0.7. The Level 6 has one million words (16-bits per word) of internal memory. This is equivalent to two megabytes of memory.

There are fourteen Level 6 systems installed in BLM's twelve State Offices, BIFC, and the Phoenix Training Center. Four models of the Level 6's are in use. They include models 33, 43, 47, and 57. The total CPU processing capability of theses systems is approximately equivalent to the DPS-8/70 processor at the DSC. Internal memory sizes for the State Office Level 6s range from 256k to 640k bytes. Figure 3-1 displays the breakdown of processing power (MIPS) for BLM CPUs by vendor.

Ten of the State Offices have computer systems on which GIS applications are run. The Eastern States Office and BIFC have no GIS. There are currently four Data General Models and two Prime Computer models in use. The Data General models include the DG C330, DG M600, DG MV10000, and the DG MV8000. The MV models are both 32-bit processors with MIPS rating of 2.5 and 1.2 respectively. The Prime Computers in use include the Prime 9955-II and the Prime 9655. Both the Prime 9955-II and 9655 computers are 32-bit processors with a MIPS ratings of 5.0 and 1.3, respectively. The older Data General computers in the State Offices will be replaced by Prime 9955-II computers.

Breakdown of Processing Power (MIPS) for BLM CPUs by Vendors



For purposes of estimating CPU requirements for conversion costing and scheduling, the target environment is assumed to provide comparable processing power as currently exists at each site as an absolute minimum.

3.1.1.2 Disk Drive Requirements

Figure 3-2 identifies BLM's estimated disk space requirements at the time of conversion (i.e., 1990) based on currently available information. Using an IBM 3350 twin disk drive with a total storage capacity of 635 megabytes as a model, BLM will need a minimum of 46 disk drives for data storage. This assumes that 75% of the disk drive's capacity will actually be available for data storage. The other 25% will be consumed by disk overhead and wasted space. In addition, DSC will need three disk drives for system use. Each State Office facility will require one disk drive for system use. Therefore, the total number of disk drives required is 59.

This is a simple estimate which has been made to estimate conversion costs only. The actual number of disk drives required depends on many technical factors (e.g., channel utilization, access frequency, etc.) which must be examined on a site-by-site basis. A more precise sizing of BLM's disk drive requirements by location will be performed in later tasks.

Appendix A includes a description of the current disk drives and storage included in the existing technical environment at DSC, BIFC, and the twelve State Offices.

3.1.1.3 Tape Drive Requirements

The DPS-8/70 configuration consists of eight Honeywell MTU503 tape drives. The MTU503 is a 9-track drive that can read 800 and 1600 bits per inch (BPI) tapes at a rate of 125 inches per second (IPS). DSC has two Honeywell tape drives for backup and batch tape processing on the Level 6. Both 7-track and 9-track Honeywell tape drives are used for the Honeywell Level 6s in the State Offices and BIFC.

Figure 3-2
BLM Disk Space Requirements
(as of 1990)

Facility	Number of Megabytes	Number of Disk Drives
Alaska	79	1
Arizona	158	1
BIFC	22	1
California	30	1
Colorado	261	1
DSC	15,894	34
ESO	650	3
Idaho	50	1
Montana	645	2
Oregon	622	2
Utah	110	1
Wyoming	564	2

NOTE: This figure does not include data from Nevada or New Mexico.

A complete tape drive inventory for DSC, BIFC, and the twelve State Offices is provided in Appendix A.

AMS has assumed that the target environment will provide a comparable number of tape drives to BLM's current environment. To simplify conversion cost and schedule estimation, it is assumed that BLM's requirements will remain essentially the same between now and conversion. In addition, it is assumed that BLM will convert its old tapes (i.e., 7-track) to the newer 9-track tape format as part of the conversion process.

It is also assumed that BLM's future requirements for cartridge drives will be comparable to BLM's current environment.

3.1.1.4 Printer Requirements

BLM's printer requirements for the target environment must be equivalent to their current inventory of printers. (See Appendix A for a complete inventory of DSC's printers and the SO's printers.) As with tape drives, technical improvements to printer capabilities would not necessarily reduce the overall number of printers required by BLM because local printing will still be required. AMS assumes that a comparable number of printers will be required at the time of conversion as exists today at each location.

3.1.2 Systems Software

The target system must provide the equivalent of BLM's existing system software packages. A comprehensive list of these packages is provided in Figure 3-3.

3.1.3 Data Files/Data Base Files

The target system must satisfy BLM's total storage space requirements. Figures 2-7, 2-8, 2-13, and 2-14 contain BLM's current space requirements for DSC and the State Offices. The target environment must be able to meet these space requirements plus an estimated 8.5% growth per year

Figure 3-3
The Target System Must Provide the Equivalent of Existing BLM Software Packages

Software Facilities

- Editor & Text Subsystems - Utilities
- Sort/Merge - Utility
- Production Facility (UPF) - System Facility
- INFO - 4GL/DBMS
- DM-IV Transaction Processor - Utility
- Data Entry Facility - System Facility
- Communications & File Transfer Facility
- RIT/CPYTP
- FILEIT - Utility
- SPSS - Statistical Package
- FINSYS-2
- BMD
- ABACUS
- STATPACK - Statistical Package
- Bisynchronous Transport Facility
- OAS Document Processing
- OAS Records Processing
- TSS Statistics Package
- 2780/3780 Workstation Facility - System
- AZREX
- HASP - Graphics Package
- IQ
- Mathematical Programming System - Application Package
- Project Management & Control System - Application Package
- SAS - Statistical Package
- SIMSCRIPT
- SURGE
- SVA/RANDOM
- TPS-6 Screenwriter - Screen Generator
- TPS-6 Transaction Processor - System Utility
- TSS Business Finance Package
- TSS Management Science Package
- TSS Mathematics Package

Other Software

- ASPEN/2 - DBMS
- CONVER & UTL2
- CONVER UTILITY
- CONVER/UTL2
- DEF
- DEFII
- EC FILES
- FORMS FACILITY - Screen Generator
- FORTRAN - Compiler
- GMS - Screen Processor
- LEVEL-6/VFORMS - Screen Generator
- UTL2 CONVER
- VISION
- VISION/VDAM DISPLAY

through 1990 (based on the growth projected by BLM ADP staff in the software surveys).

3.2 Other Requirements

In addition to the hardware, systems software, and data files/data base files requirements, the target system must satisfy BLM's security requirements (i.e., provide the required security levels as discussed in sections 2.2.1.5 and 2.3.1.5).

4. CONVERSION COST ESTIMATION

4.1 Conversion Costing Methodology

The conversion model was used to estimate BLM's conversion costs for the Denver Service Center, twelve State Office ADP Facilities (SO) and the Boise Interagency fire Center's ADP facilities. In order to run the model, several parameters were required. The parameter values input were derived from three sources: survey responses and previously collected data, models defaults or values recommended by FSMSC, and educated guesses. Figure 4-1 provides a list of parameters derived from these sources. Figure 4-2 contains the values of the parameters for which default or assumed values were required. The bolded values were default values. The remaining parameters were estimates based on assumptions about the conversion. Appendix D contains the cost model input data (as well as the output generated) for DSC and each SO and BIFC.

4.2 Conversion Tasks

In this section, each of the conversion tasks listed in Section 1.4.1.1 are explained. For the readers convenience these are repeated below:

- Conversion Planning and Analysis
- Work Package Identification and Preparation
- Test Data Generation and Validation
- Application Program and System Software Conversion
- Data File and Data Base Conversion
- Operation Control Language Conversion
- Redocumentation
- System Testing
- Acceptance Testing
- Conversion Management/Contract Administration and Support

Figure 4-1
Sources for FSMSC Model Parameter Values

Survey Responses and Previously Collected Data

- Average ADP staff salaries
- Lines of code by language and conversion class
- Number of files and data bases
- Number of files/data bases by complexity class
- Number of job streams
- Number of languages
- Number of programs
- Number of systems
- Percent of available documentation
- Percent of logic executed by test data

Model Defaults or Values Recommended by FSMSC

- Autotranslation rate by code conversion class
- JCL and application code development rates
- Machine use percentage required, by task
- Percent of coordination required for documentation
- Percent of logic required to be executed by test data
- Percent of management and contract support
- Probable number of system test reruns

Educated Estimates

- Compatible or non-compatible conversion
- Number of days for acceptance test
- Other costs by task

Figure 4-2
Default or Assumed Values Were Required for Some of the Conversion Cost Model Parameters

Parameter		Value
2.	Non-Compatible System Conversion	N
14.	Percent Logic Paths Required to be Executed	.7
15.	Number of Days Duration for Acceptance Testing	30
16.	Number of Probable Reruns for Systems Testing	8
17.	Percent Conversion Management and Contract Support	10%
18.	Percent of Coordination Required for Documentation	10%
29.	Machine Use Percentage Task A. Conv. Plan/Analysis	10%
30.	Machine Use Percentage Task C. WP ID and Prep.	10%
31.	Machine Use Percentage Task D. TD Set Gen/Valid	10%
32.	Machine Use Percentage Task E. Application Conv.	10%
33.	Machine Use Percentage Task F. DF/DB Conv.	10%
34.	Machine Use Percentage Task G. OCL Conv.	10%
35.	Machine Use Percentage Task I. System Test	10%
36.	Machine Use Percentage Task J. Accept. Test	10%
39.	Other Costs Task C. WP ID/Prep	1200
* 47.	Other Costs Task K. Site Preparation	87500
* 49.	Other Costs Task M. Conv. Training	$134/staff
51.	Other Costs Task O. Conv. Tools/Aids	50000
62.	Baseline New Dev. Rate OCL/JCL	60
74.	Baseline New Dev. Rate per Language	25
76.	Automated Translation Percent Class 1	.15
78.	Automated Translation Percent Class 2	.5
80.	Automated Translation Percent Class 3	.8
82.	Automated Translation Percent Class 4	.9
85.	Baseline New Dev. Rate per Language	15
87.	Automated Translation Percent Class 1	.15
89.	Automated Translation Percent Class 2	.5
91.	Automated Translation Percent Class 3	.8
93.	Automated Translation Percent Class 4	.9
96.	Baseline New Dev. Rate per Language	25
98.	Automated Translation Percent Class 1	.15
100.	Automated Translation Percent Class 2	.5
102.	Automated Translation Percent Class 3	.8
104.	Automated Translation Percent Class 4	.9
107.	Baseline New Dev. Rate per Language	10
109.	Automated Translation Percent Class 1	.15
118.	Baseline New Dev. Rate per Language	10
120.	Automated Translation Percent Class 1	.15
122.	Automated Translation Percent Class 2	.5
124.	Automated Translation Percent Class 3	.8
	Machine Usage Percentage	10%

* For SO's. DSC values for Site Preparation and Training were estimated separately.

For each task, there is an explanation of the conversion task and its associated algorithm as presented in the Conversion Cost Model (Version 4) - Cost Model Handbook. These algorithms were developed by the FCSC based on the rationale presented here.

For each task, the model estimates the number of staff days (SD) required to complete the conversion task. Using an average annual salary for each location, the model estimates the staff-cost. Assuming a machine usage percentage of 10% (the default recommended by FSMSC guidelines), the model calculates the machine cost. The total cost for a task is calculated by summing the staff-cost estimate, the machine-cost estimate, and the miscellaneous-cost estimate.

The estimated conversion costs for the DSC, the SOs, and BIFC are presented in Chapter 5, Summary of Findings.

4.2.1 Conversion Planning and Analysis

Conversion planning and analysis consists primarily of:

- Review and revision of existing conversion policies, procedures, and standards;
- Definition and development of new policies, procedures, and standards;
- Implementation of new and revised policies, procedures, and standards;
- Development of a plan for converting application systems and programs;
- Preparation of a detailed description of the work to be done;
- Selection of conversion priorities; and

- Preparation of a schedule for applying the resources to the work.

The estimation of conversion planning and analysis is a function of the size of the conversion project and the detail of the analysis and planning required. According to the FCSC conversion cost model, if a conversion to a noncompatible target environment is initiated, the number of estimated staff-days (SD) required to accomplish the planning and analysis tasks average approximately five staff-days per system converted (S), one staff-day per program (P), and one staff-day per job stream (J), including independent runs. Therefore, the formula used in the model to estimate the number of staff-days required to perform the analysis and planning of a conversion to a noncompatible environment is:

$$SD = (5 * S) + P + J$$

According to the FCSC conversion model, conversion to a completely compatible target environment is estimated to require the following number of staff-days (SD) to accomplish the planning and analysis tasks: one staff-day per system converted (S), one-half staff-day per program (P), and one-half staff-day per job stream (J), including independent runs. Therefore, the formula used to estimate the number of staff-days required to perform the analysis and planning of a conversion to a completely compatible environment is:

$$SD = S + P/2 + J/2$$

According to the Conversion Cost Model, this is the only task which must be performed in a fully compatible conversion.

4.2.2 Work Package Identification and Preparation

The task of work package identification and preparation consists of the following activities:

- The definition of a work package and its elements;

- The identification of all programs, files, documentation, test data, etc. which should be included in each work package;

- The effort to physically assemble all work packages and their elements; and

- The establishment of an inventory and control system for the work packages.

Work packages typically consist of transmittal sheets, system/subsystem descriptions, system/subsystem run documentation, system/subsystem test data, program and file inventory forms, descriptions, documentation, and source and compile listings. During this task the materials to be used in generating and validating test data are assembled; and software, files, and JCL are converted.

The resources required to perform work package identification and preparation for a noncompatible target environment are estimated by the FCSC conversion model to average three staff-days for every system (S) and one staff-day for every 10 system components (i.e., programs (P), files (F), and job streams (J)). This is illustrated as follows:

$$SD = (S * 3) + ((P + F + J)/10)$$

This task is not performed for a fully compatible conversion.

4.2.3 Test Data Generation and Validation

Test data preparation includes all creation, preparation, and generation of test data sets to validate the converted programs, files, and systems. Because test data are usually prepared and generated on the current computer, the preparation and generation of the data should include the conversion or transfer of the test data files to the target computer.

The estimate for this task is based on four major factors. They are:

- The size of the project;
- The amount (expressed as a percentage) of code or program logic paths exercised with any existing test data;
- The amount (expressed as a percentage) of code or program logic paths to be exercised during the conversion to ensure successful conversion so that the user will feel confident with the end results; and
- The status of the documentation in terms of the amount (expressed as a percentage) of adequate and up-to-date documentation that exists.

The first factor, the size of the project, refers to the number of programs (P) and files (F) for which test data must be created, generated and/or validated. The second factor, the percentage of code exercised by any existing test data (TDE) refers to the quantity and quality of the source environment's test data. The third factor, the percentage of code to be exercised during the conversion effort, refers to the quantity and quality of the test data that is required to ensure that the software was converted correctly and to alleviate the burden of risk from the user. The final factor affecting the resource estimation of this task is the documentation status. The availability of adequate, up-to-date documentation can lessen the amount of work required to generate and validate test data.

Because of the different factors affecting test data generation, the algorithm for estimating this task is variable. The algorithm assumes moderate use of automated conversion tools such as percentage of code analyzers, test coverage monitors, and test data generators. The resources required to perform this task will decrease as the percentage of code the test data currently exercises (TDE) increases, the percentage of code the test data is required to exercise (TDR) decreases, and the percentage of adequate and

up-to-date documentation increases. This algorithm is illustrated as:

$$SD = ((2 * P) + F) * (.2 + (TDR - TDE)) * (1 - (DOC/3))$$

where TDR is assumed to be equal to 0.70 by the FSMSC, TDE is the actual percentage of logic tested by test data based on survey responses from BLM, and DOC is a value from one to ten identifying the quality of the existing documentation.

This task is not performed for a completely compatible conversion.

4.2.4 Application Program and System Software Conversion

The conversion of application programs and systems software primarily consists of:

- Software translation, generation, or transference;
- Software compilation and debugging;
- Program level redocumentation; and,
- Unit testing with test data.

The three major factors that affect the conversion of application programs and system software are:

- Conversion complexity;
- Documentation status; and
- Productivity rates.

The algorithm used to calculate this conversion task is:

$$SD = SSD1 + SSD2 + SSD3 + SSD4 + SSD5$$

where $SSDs = ((LOCs * (1 - Ts))/MCPRs) + ((LOCs * Ts)/ACPR)$

$$MCPRs = (BR * NDE)/(((1 - (DOC/2)) * DEs) + PEs + TEs)$$

for $s = 1, \ldots, 5$

where SSDs = Staff-day resource requirements for each software conversion complexity class (for each system, language, etc.).

LOCs = Number of lines of source code data for each software conversion complexity class including comment lines for all application programs and system software. A statement may be written over more than one line and a line of code may consist of multiple statements. For estimating purposes, a line of code should equal one statement.

s = Software conversion complexity class (1,2,3,4, or 5 as previously defined).

Ts = Percentage (expressed as a fraction) of lines of code capable of being correctly translated or generated by an average automatic translator or generator for each software complexity class. This includes code which requires no change to execute in the target environment. Therefore, (1 - Ts) is the percentage of code that will require manual changes. Typical ranges of correct automatic translation for each software conversion complexity class are:

Class 1 = 0% - 25%
Class 2 = 20% - 75%
Class 3 = 65% - 90%
Class 4 = 80% - 100%
Class 5 = no automatic translation, transfer only; T5= 0

MCPRs = Average manual conversion productivity rate for each software conversion complexity class.

ACPR = Average automatic conversion productivity rate for an automatic translator/generator. The default is 1,000 lines of code per day. This may be adjusted if appropriate.

DOC = Percentage (expressed as a fraction) of documentation available.

BR = Baseline productivity rate for new development in number of lines of debugged source code developed per day.

NDE = Total effort required for new development (100).

DEs = Design effort required for each class:

Class 1 = 30
Class 2 = 20
Class 3 = 4
Class 4 = 1
Class 5 = 0

PEs = Programming effort required for each class:

Class 1 = 15
Class 2 = 10
Class 3 = 2
Class 4 = .5
Class 5 = 0

TEs = Testing effort required for each class:

Class 1 = 35
Class 2 = 20
Class 3 = 10
Class 4 = 2

Class 5 = .1

A detailed explanation of the algorithm associated with this conversion task is presented in the Cost Model Handbook.

This task is not applicable to completely compatible conversions.

4.2.5 Data File and Data Base Conversion

Data file and data base conversion includes:

- Detailed file and data base analysis;
- Conversion or transfer;
- File level redocumentation; and,
- Unit testing of the file and data base conversion.

The data files and data bases to be converted include all permanent mass storage and tape files that are not feasible to regenerate and that are associated with the application programs to be converted.

The algorithm used to estimate this conversion task is:

$$SD = (FSD1 + FSD2 + FSD3 + FSD4 + FSD5) + (DSD1 + DSD2 + DSD3 + DSD4 + DSD5)$$

where $FSDf = (Ff * FCFf) * (1 - (DOC/2))$ for $f = A, \ldots, E$

$$DSD = ((LOCs * (1 - Ts))/MCPRs) + ((LOCs * Ts)/ACPR)$$

$$MCPRs = (BR * NDE)/(((1 - (DOC/2)) * DEs) + PEs + TEs)$$

for $s = 1, \ldots, 5$

The Cost Model Handbook contains a detailed description of the algorithm for this task. Briefly, the algorithm includes an estimate of staff-day resource requirements, average manual conversion productivity rates, and a classification of files and data bases by their relative complexity.

This task is not applicable to completely compatible conversions. Data file and data base conversion for compatible conversions only requires essentially a "file transfer" (i.e., the source and target systems and environments are sufficiently similar that conversion is not really required).

4.2.6 Operation Control Language Conversion

The conversion of operation procedures or control languages consists of:

- o Analysis;
- o Translation, generation, or rewrite;
- o Operating level redocumentation; and,
- o Unit testing.

The analysis of the operating procedures (i.e., job streams) focuses on the compatibility of the operating philosophies of the current and target computer environments. The effort required to convert the operation control language from one environment to another is a function of:

- o The complexity and compatibility of the source and target environments;
- o The availability of adequate operations documentation; and,
- o Manual and automatic productivity rates.

The methodology for estimating the operating control language conversion is identical to that of estimating the application program and system software conversion. Since the complexity class of all operating control language programs and software is assumed to be "software transferent" (i.e., programs are comprised of software which does not require any translation, but only a simple transfer from source to target environment and recompiling and relinking), this task is not applicable to completely compatible conversions.

The algorithm used to estimate this conversion task for non-compatible operating systems is:

$$SD = SSD1 + SSD2 + SSD3 + SSD4 + SSD5$$

where $SSDs = ((LOCs * (1 - Ts))/MCPRs) + ((LOCs * Ts)/ACPR)$

$$MCPRs = (BR * NDE)/(((1 - (DOC/2)) * DEs) + PEs + TEs)$$
$$\text{for } s = 1, \ldots, 5$$

The Cost Model Handbook contains a detailed description of the algorithm for this task.

4.2.7 Redocumentation

Redocumentation consists of changing technical, user, and operational documentation at the application system, operating system, and project level to reflect the results of the conversion to a new environment. For purposes of estimating conversion costs, redocumentation does not include enhancing out-of-date documentation or creating documentation where it was nonexistent beyond the minimum required for conversion.

Assuming conversion to a noncompatible target environment, the FCSC conversion cost model assumes that the technical staff-day (TSD) resource requirements to accomplish the technical portion of the redocumentation task require approximately 1 staff-day for every 4 programs (P), and 1 staff-day for every system (S). The clerical staff-day redocumentation tasks require approximately twice as long as the technical portion, approximately 1 staff-day for every 2 programs (P), and 2 staff-days for every system (S). This is because the clerical work involves substantial amounts of proofreading, editing, and typing of both draft and final copies of the documentation. The cost model adds a percentage (typically ten percent) for the redocumentation coordination effort (RCOR) among the technical staff,

clerical staff, and entire project staff. The calculations to estimate this task are illustrated as:

$$TSD = (P/4 + S) * RCOR * DOC$$

$$CSD = (P/2 + (S*2)) * RCOR * DOC$$

These two equations are combined into one:

$$SD = (((3/4) * P) + (3 * S)) * (1 + RCOR) * DOC$$

4.2.8 System Testing

System testing is defined as full application system testing conducted with system test data and involves all system components, the output of which the user should check at all levels. Acceptable comparison of system test outputs against predetermined test results determines when the system can go into acceptance testing.

The FCSC conversion model estimates that the staff-days (SD) to accomplish system testing, assuming conversion to a noncompatible target environment, are approximately one staff-day (SD) per four job streams (J), one staff-day per two programs (P), one staff-day per two systems (S), and one staff-day per 80 system components (the total number of programs (P), files (F), and job streams (J) and independent runs). This is multiplied by a rerun factor (RE) which is derived from the number of probable reruns necessary during system testing in order to achieve acceptable output, which should be set by an experienced estimator. Typically conversions can require approximately 50 to 100 reruns to achieve acceptable output. This calculation can be illustrated as:

$$SD = (J/4 + P/2 + S/2 + ((P + F + J)/80)) * (1 + (RE/10))$$

This task is not applicable to fully compatible conversions.

4.2.9 Acceptance Testing

Software acceptance testing involves converted programs and job streams, all operating instructions and procedures, revised documentation, and converted live data files and data bases. New computer runs should be duplicating parallel or previous runs on the source computer.

The resources estimated for this task are for those personnel involved in the actual software acceptance testing such as users, system and program analysts, programmers, input clerks, etc. During the duration of acceptance testing, staffing levels may have to be periodically increased depending on the workload and the nature of the test. The estimated staff-day (SD) resources used by the FCSC conversion model, assuming a constant staffing level, is usually about one staff-day for every eight systems (S) for the duration (DUR) of the acceptance testing. The programs and systems would not have to be retested individually during acceptance testing, so only the job streams (J) and all the programs (P) and files (F) grouped together need to be tested. The staff-day resources required for this testing are about one staff-day for every job stream, and one staff-day for every five programs (P) and files (F). This is multiplied by a negative exponential function, where e is the base of natural logarithms, which tempers the effect of a long duration. This calculation can be illustrated as

$$SD = (DUR * (S/8)) + ((J + ((P + F)/5)) * (1 - e^{**} - (DUR/20)))$$

where DUR = 20 days for a noncompatible conversion.

4.2.10 Conversion Management/Contract Administration and Support

Conversion management and administrative overhead consists of such activities as managing the conversion effort; supervising the technical, clerical, and other managerial personnel; and any project management reporting which may be required. Contract administration and support consists of administering and supporting any contract that is let for the conversion project and any technical support needed to assist in the contract administration.

For estimating purposes a percentage between 0 and 30 percent (10 percent standard) is applied to the staff day resources for the following tasks to cover conversion management and administrative overhead and/or contract administration and support:

- Conversion Planning and Analysis;
- Conversion Work Package Identification and Preparation;
- Test Data Generation and Validation;
- Application Program and System Software Conversion;
- Data File and Data Base Conversion;
- Operation Control Language Conversion;
- Redocumentation;
- System Testing; and
- Acceptance Testing.

This calculation can be illustrated as:

SD = (TOTAL SD FOR TASKS A and C thru J) * MCS

5. SUMMARY OF FINDINGS

This chapter contains a brief description of the results obtained from running the FSMSC conversion model on DSC, BIFC, and the twelve State Offices. The total Conversion cost estimate is $12,234,000. Figure 5-1 illustrates the total conversion costs by task. The detailed output generated for DSC, BIFC, and the State Offices is provided in Appendix D.

5.1 DSC Conversion Cost Estimate

For a noncompatible conversion, the estimated conversion cost for the Denver Service Center is $3,369,500. This estimate was calculated using the microcomputer-based software supplied with the Cost Model Handbook. Figure 5-2 contains the estimated conversion costs by conversion task for the Denver Service Center.

5.2 SO Conversion Cost Estimate

The estimated conversion costs for each State Office facility and BIFC are presented in Figure 5-3. These estimates for a noncompatible conversion were calculated using the microcomputer-based software supplied with the Cost Model Handbook.

Figure 5-1

The Conversion Cost Estimate for BLM Totals $12,234,000

CONVERSION TASKS	COSTS (in thousands)
Conversion Planning and Analysis	$839
Inventory/Study Preparation	85
Work Package Indentification and Preparation	440
Test Data Generation/Validation	2,094
Software Conversion	1,300
Data File/Database Conversion	432
Operating Control Language Conversion	75
Redocumentation	516
System Testing	1,081
Acceptance Testing	812
Site Preparation	1,488
Conversion Training	1,241
Management/Contract Support	1,533
Tools/Aids	300
TOTAL	**$12,234**

Figure 5-2

The Total DSC Conversion Cost Estimate is $3,369,500

CONVERSION TASK	COST ($$$)
Conversion Planning and Analysis	347.4
Inventory/Study Preparation	75.7
Work Package Identification Preparation	158.3
Test Data Generation/Validation	411.4
Software Conversion	548.5
Data File/Database Conversion	109.7
Operating Control Language Conversion	48.7
Redocumentation	138.5
System Testing	405.2
Acceptance Testing	359.6
Site Preparation	350.0
System Transition	0.0
Conversion Training	169.4
Management/Contract Support	147.1
Tools/Aids	100.0
TOTAL	**3,369.5**

Figure 5-3
Conversion Costs at Each Office
Range from $312,800 to $3,610,000

FACILITY	COSTS (in thousands)
Alaska State Office	$3,610
Arizona State Office	539
Boise Interagency Fire Center	349
California State Office	383
Colorado State Office	327
Denver Service Center	3,370
Eastern States Office	319
Idaho State Office	351
Montana State Office	668
Nevada State Office	513
New Mexico State Office	313
Oregon State Office	426
Utah State Office	471
Wyoming	595
TOTAL	**$12,234**

6. PROCUREMENT ALTERNATIVES

This section analyzes the impact of converting the current BLM ADP software as it pertains to the two procurement alternatives: fully competitive and compatibility-limited. The benefits and risks of each alternative are discussed in section 6.3. Section 6.4 discusses BLM's plans to reduce the cost and/or risk of future conversions.

6.1 Procurement History

BLM's ADP contract history is not very extensive. The DPS-8/70 procurement is the only large-scale competitive procurement BLM has ever initiated for computer systems. Figure 6-1 displays the chronology of BLM's procurement history for computer systems.

6.2 Explanation of Procurement Alternatives

Estimating conversion costs are affected by two potential procurement alternatives. These are (1) a fully competitive procurement and (2) a compatibility-limited procurement.

A fully competitive procurement assumes a noncompatible target environment (i.e., a conversion to a different vendor's equipment and operating system). Many programs will require some sort of source code conversion due to the change in the technical environment. The operating control language will also need to be rewritten or converted, and data files will need to be transferred or converted to the new environment. Due to the extent of the changes required, thorough testing will be required which will necessitate the preparation of test data.

A compatibility-limited procurement requires a compatible source and target environment. This procurement alternative assumes no need to recompile the programs or make any changes to the operating control language program and data files.

FIGURE 6-1

BLM'S Procurement History for Computers

Pre-1969	Timeshare on the Bureau of Reclamation's Burroughs Computer
1969	Timeshare on University of Denver's B-5500, Burroughs Computer
1970	Cooperate with the Bureau of Mines to get a surplus B-5500 from NASA
1972	BLM gets surplus B-5500 from the Army
1977	On October 20, BLM awards a contract to Honeywell for a Honeywell 66/80
1978	In March, the Honeywell 66/80 is installed
1978	BLM acquires a Honeywell Level 6 off of the GSA Schedule
1979	Additional Honeywell Level 6's are acquired off of the GSA Schedule for seven State Offices (SO), BIFC, and the Washington Office
1980	Honeywell Level 6's acquired via the GSA Schedule for the remaining SOs.
1981	In September, BLM awards a five-year maintenance and upgrade contract to Honeywell for both the 66/80 and Level 6's
1982	In October, BLM upgrades the 66/80 to a DPS-8/70 and takes title

6.3 Analysis of Alternatives

An analysis of the two procurement alternatives is presented below. In order to have a compatibility-limited procurement, the Federal Information Resources Management Regulation (FIRMR) requires that there be at least three potential bidders (i.e., Honeywell and two Honeywell-compatibles or three system integrators bidding Honeywell equipment). However, there are not two Honeywell-compatible hardware environments and a procurement of this size would almost certainly be protested by other equipment manufacturers if Honeywell equipment were specified. Therefore, BLM must perform a fully competitive procurement. (For a more detailed discussion, see Task 5, Refinement of Feasible Options.)

6.3.1 Fully Competitive Procurement

Currently, much of BLM's ADP environment is based on Honeywell computer systems. A fully competitive procurement would allow any hardware manufacturer to bid on the potential contract for facilities and services. Thus, a fully competitive procurement could result in any type of ADP environment for BLM (e.g., IBM, DEC, PRIME, Data General, Honeywell, etc.). The benefits and risks of a fully competitive procurement are discussed in the following sections.

6.3.1.1 Benefits

The single largest benefit of a fully competitive procurement is the potential for a greater variety and number of respondents to the call for bids. Due to the added number of potential bidders, costs may be lower than with a compatibility-limited procurement.

6.3.1.2 Risks

The risks associated with a fully competitive procurement arise only if a noncompatible system is selected. Converting to a noncompatible system requires personnel training, recoding, testing, and validation of application programs. All of these tasks are costly and time-consuming.

The impact on the system's users would be greater due to the vast amount of user training which would be required. Training would have to encompass systems support, security, programming techniques, etc. This need for additional training and an unfamiliarity with a non-Honeywell compatible environment would decrease the acceptability of the system with the users.

6.3.2 Compatibility-Limited Procurement

A compatibility-limited procurement would only allow hardware manufacturers, whose equipment was Honeywell-compatible, to bid on the potential contract. Thus, a compatibility limited procurement would result in only a Honeywell or Honeywell-compatible hardware environment. The benefits and risks of a compatibility limited procurement are discussed in the following sections.

6.3.2.1 Benefits

The benefits of a compatibility limited procurement are the converse of the risks of a fully competitive procurement. With a compatibility limited procurement, there would be minimal need to find suitable software substitutions. Thus, BLM's projects would not need to be stopped nor would their mission be jeopardized due to noncompatible application software. Additionally, all existing applications could be run in the new environment and the data structures and coding techniques currently in place would not be a problem.

The impact on the system's users would be minimal due to their familiarity with the current system and procedures. Training would only have to encompass any new systems which were added at the time of conversion. This familiarity with the environment would increase the acceptability of the system to the users. Additionally, there would not be a need to replace some of the existing staff with staff already knowledgeable with a different system.

Finally, the cost of the conversion would be low with this type of procurement. Most application programs would require only slight modification, end-users and systems support would not need to be retrained, and software owned by BLM would still be usable.

6.3.2.2 Risks

The primary risks of a compatibility-limited procurement are higher costs, potential vendor protest, and a less innovative configuration. Most importantly, a compatibility-limited procurement may preclude vendors who can provide less expensive but equally acceptable hardware. If BLM were to expand is such a way that existing applications will be directly transferable, a sole source acquisition with Honeywell would be necessary since Honeywell compatibility would be required. There are no Honeywell-compatible vendors in today's marketplace. A compatibility-limited procurement also discourages new configurations for the BLM ADP facilities.

6.4 Future Conversions

In order to minimize the cost and/or risk of future conversions, BLM plans to do the following during its procurement of new BLM ADP facilities:

- Develop new software in standard languages to as great a degree as possible (e.g., use only ANSI standard code, avoid assembly language);
- Avoid the use of machine dependent file organizations; and
- Use program sharing (i.e., Federal Software Exchange Program).

7. SCHEDULES

This chapter provides tentative acquisition and conversion start-up schedules to illustrate the relative sequence of the respective activities, as well as a detailed list of milestones to be incorporated into the conversion effort.

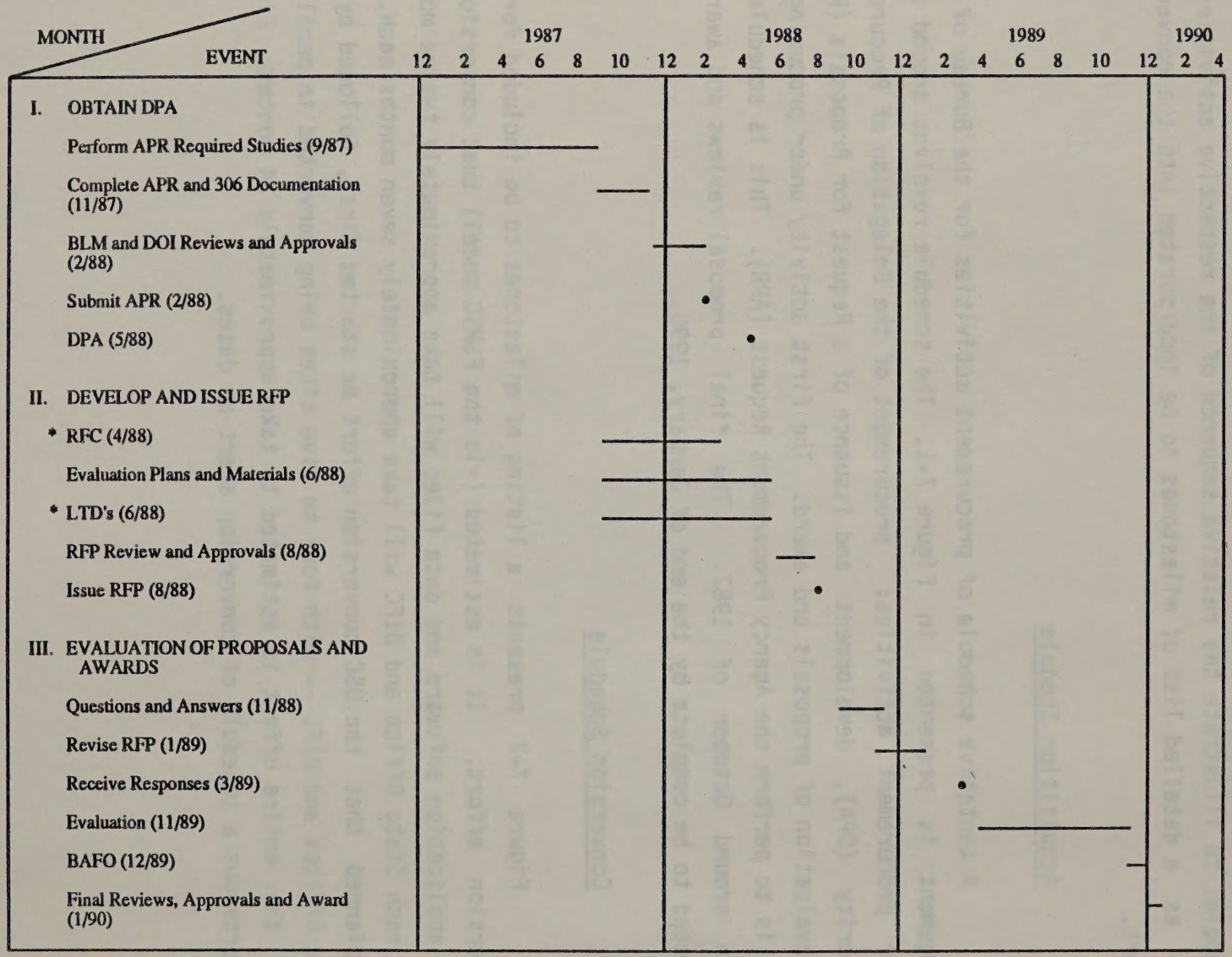
7.1 Acquisition Scedule

A tentative schedule of procurement activities for the Bureau of Land Management is presented in Figure 7-1. The schedule revolves around three major procurement activities: procurement of the Delegation of Procurement Authority (DPA), development and issuance of a Request for Proposals (RFP), and evaluation of proposals and award. The first activity under procuring the DPA is to perform the Agency Procurement Request (APR). This is scheduled to begin around October of 1987. The final proposal reviews and award is expected to be complete by the end of January, 1990.

7.2 Conversion Schedule

Figure 7-2 presents a listing of milestones to be included for the conversion effort. It is estimated (via the FSMSC model) that conversion of DSC application software and data files will take approximately twelve months and each State Office and BIFC will take approximately seven months each. It is planned that the DSC conversion effort be started first, followed by the State Offices and BIFC -- with four to five sites being converted in parallel. Thus the entire effort is estimated to take approximately 24 months. Figure 7-3 provides a schedule of conversion start-up dates.

Figure 7-1
ADP Modernization
Acquisition Schedule


MONTH
EVENT
1987
1988
1989
1990
12 2 4 6 8 10 12 2 4 6 8 10 12 2 4 6 8 10 12 2 4
I. OBTAIN DPA
Perform APR Required Studies (9/87)
Complete APR and 306 Documentation (11/87)
BLM and DOI Reviews and Approvals (2/88)
Submit APR (2/88)
DPA (5/88)
II. DEVELOP AND ISSUE RFP
* RFC (4/88)
Evaluation Plans and Materials (6/88)
* LTD's (6/88)
RFP Review and Approvals (8/88)
Issue RFP (8/88)
III. EVALUATION OF PROPOSALS AND AWARDS
Questions and Answers (11/88)
Revise RFP (1/89)
Receive Responses (3/89)
Evaluation (11/89)
BAFO (12/89)
Final Reviews, Approvals and Award (1/90)

* optional activity

Figure 7-2
Detailed Listing of Procurement Milestones

Activity/Milestone

1. Form contracting and/or project team (define responsibilities and authority).

2. Review the following regulations and guidelines:

   (a) GSA 41 CFR Part 1-4 [FPR Amendment 211].

   (b) GSA 41 CFR Parts 101-35 and 101-36 [FPR Amendment F-44].

   (c) OMB Circular A-11/FPMR 101-35.204 (This circular provides guidance to agencies in preparation of budget submission, in particular, Sec. 24.7 is pertinent to ADP).

   (d) FPMR 101-35.207 (This regulation and FPR 1-4.1102-2 requires agencies to perform a comprehensive requirements analysis and detail elements to be considered).

   (e) FPMR 101-35.208 (This regulation requires that a determination of the systems/items life be made).

   (g) FPMR 101-35.209 (This regulation requires the performance of a comparative cost analysis, and details 10 different alternatives that shall be considered).

3. Prepare OMB Circular A-108 (This circular defines responsibilities for implementing the Privacy Act of 1974).

4. Prepare FPR 1-4.1109-13 software conversion study.

5. Prepare draft specification.

6. Prepare benchmark and instruction.

7. Management review of A-108 study.

8. Management review of software conversion study (FPR 104.1109-13 requires that the software conversion study be completed prior to submission of the Agency Procurement Request [APR]).

9. Review draft specification and prepare final copy.

10. Submit APR, F-126, for GSA review and delegation.

11. Receipt of DPA by agency.

Figure 7-2
Detailed Listing of Procurement Milestones (cont.)

Activity/Milestone

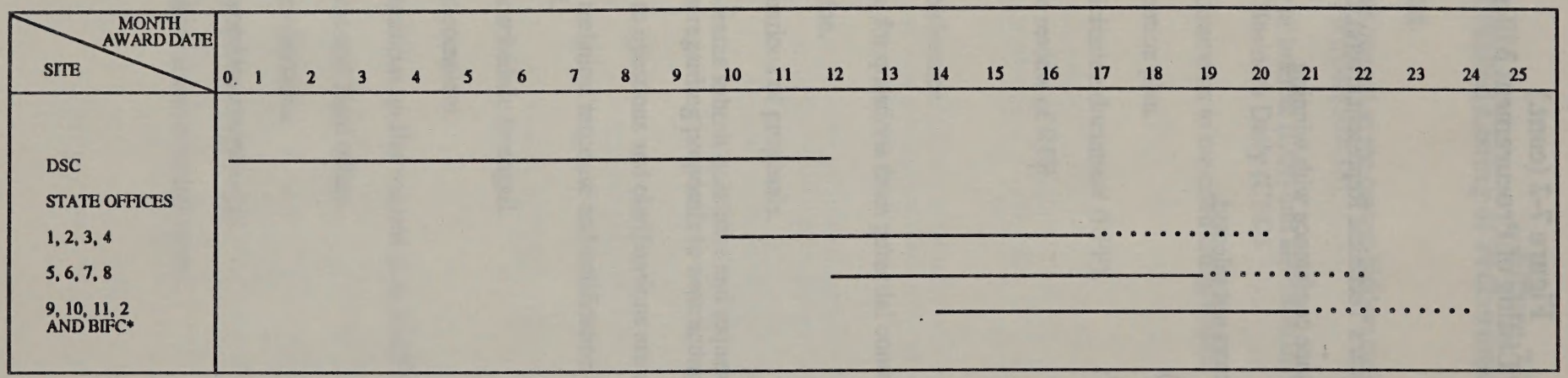
12. Send letter of interest to the central bidders mailing list (GSA FPR 104.1109-13).
13. Issue Letter of Interest (LOI) and advertise in the Commerce Business Daily (CBD).
14. Submit requirements to the contracting office.
15. Prepare selection plan.
16. Prepare solicitation document (RFP).
17. Legal office review of RFP.
18. Issue RFP.
19. Proposal conference.
20. Cut-off date for questions from potential contractors.
21. Proposals due.
22. Initial evaluations of proposals.
23. Evaluation teams submit questions and requests for clarification regarding proposals to contracting officer.
24. Responses to questions and clarifications are evaluated.
25. Determine technical response and notification to benchmark.
26. Benchmark schedule arranged.
27. Benchmark complete.
28. Close negotiations and/or request Best and Final offers.
29. Receive Best and Final offers.
30. Complete evaluations.
31. Obtain appropriate clearance(s).
32. Agency approval and contract award.

Figure 7-2 (cont.)
Detailed Listing of Procurement Milestones

Activity/Milestone

33. Appoint Contracting Officer's Technical Representative(s).
34. Orientation, pre-performance conference with winning vendor.
35. Complete letter to contractors not selected.
36. Debriefings (if requested).
37. Announce award in CBD.

FIGURE 7-3
CONVERSION SCHEDULE
START-UP DATES



NOTE: Start-Up date for BIFC conversion may be included in another group.

APPENDIX A

DETAILED INVENTORY OF BLM SYSTEMS

A.1 Overview

An analysis of BLM's ADP and telecommunications equipment would be less than meaningful without an understanding of the locations of that equipment. Appendix A describes BLM's ADP and telecommunications equipment by location, discusses the findings from an analysis of this equipment inventory by type of equipment, and includes a detailed listing of the equipment inventories for each BLM location.

Inventory in BLM is dynamic; over $6,500,000 has been approved for ADP/telecommunications purchases for FY1987. The inventories presented in this document are dated 3/86 and are the versions of inventory received by AMS from each State Office as of that date.

The Appendix consists of:

A.2 - ADP Inventory at DSC
A.3 - ADP Equipment Inventory for the Field Offices
A.4 - Central Processing Units
A.5 - Disk Drives and Storage
A.6 - Tape Drives
A.7 - Terminals and Teletypes
A.8 - Personal Computers
A.9 - Printers, Plotters, Digitizers, and Other Peripherals
A.10 - Detailed Equipment Inventories

A.2 ADP Inventory at the Denver Service Center

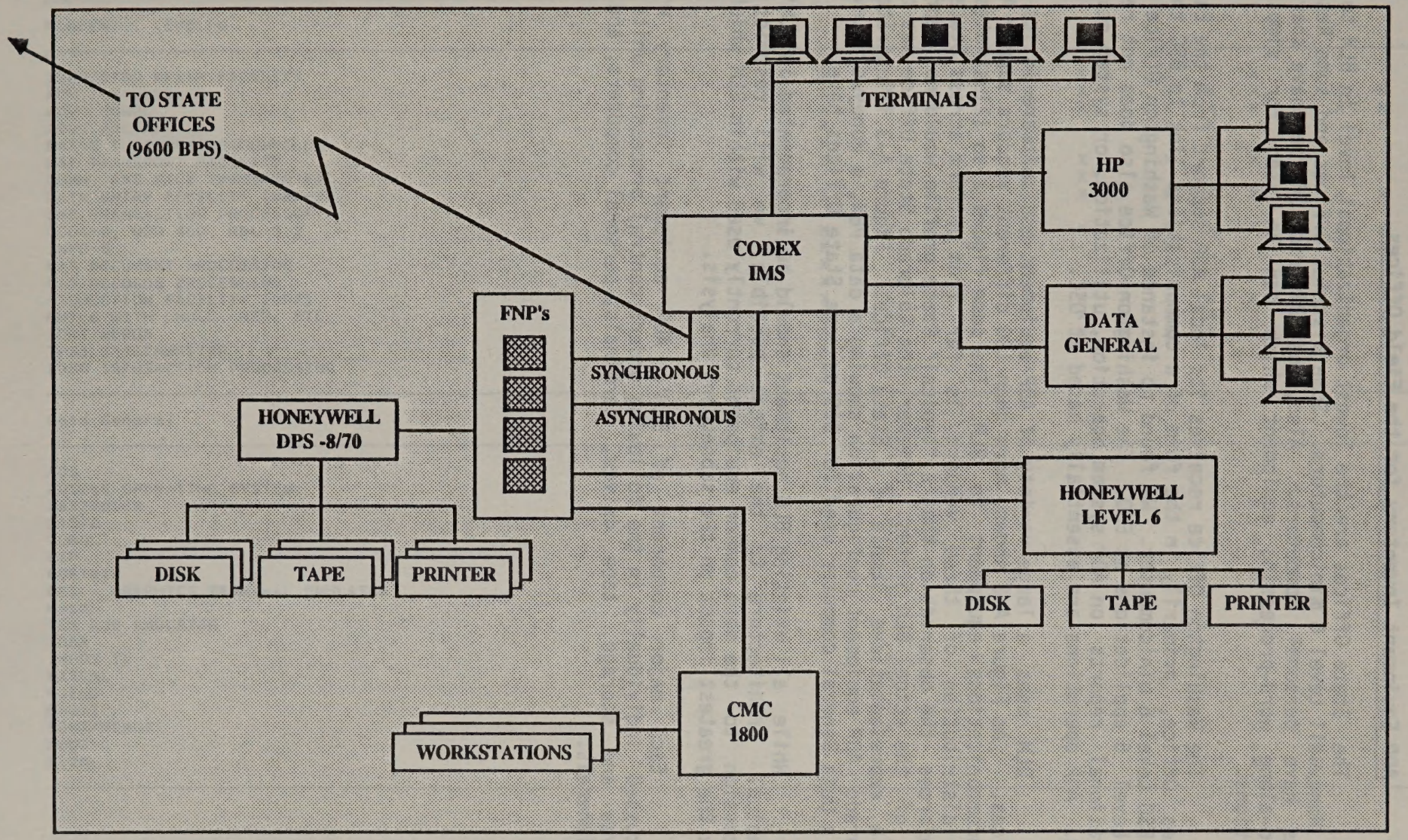
BLM's Denver Service Center (DSC) contains the largest concentration of ADP resources in the Bureau. In all, DSC operates seven major computer system configurations (as illustrated in Figure A-1):

- **A Honeywell DPS-8/70 mainframe** -- operated by the Division of Computer Operations and used to support BLM-wide application systems and for general ADP timesharing.
- **A Honeywell Level 6 minicomputer** -- also operated by the Division of Computer Operations and used to develop software for BLM's State Offices.
- **A Data General Eclipse C-330 and a Hewlitt-Packard 3000 with an array processor** -- operated by the Division of Advanced Data Technology for the development of BLM's Geographic Information System and data image analysis.
- **A Sperry-Univac CMC 1800** -- operated by the Division of Computer Operations to provide data entry services for the DPS-8/70.
- **A Data General minicomputer** -- used to support the Bureau's forms printing and distribution center in the Division of Administrative Systems.
- **A DEC Vax II** -- used to support ALMRS development.
- **A Hewlett-Packard 9000/320** -- used to support ALMRS development.

The computer systems and peripherals at the Denver Service Center are connected together through a series of local linkages. First, many of the terminals at DSC are tied to the Intelligent Matrix Switch (IMS), a communications device that provides access to the DPS-8/70 and the Level 6. The IMS also provides the potential for communications between computers. Second, the DPS-8/70 and Level 6 are tied directly to each other by Honeywell's General Remote Terminal Supervisor (GRTS) telecommunications package; GRTS provides for terminal concentration, file transfer, and batch remote job entry input and output. In general, this means that any terminal directly connected to the Level 6 (i.e., one that does not use the IMS) can still access the DPS-8/70.

Externally, the DPS-8/70 is linked to the Level 6 minicomputers in each of BLM's twelve State Offices and the Boise Interagency Fire Center (BIFC).

FIGURE A-1
Overview of Denver Service Center ADP Network



A.3 ADP Equipment Inventory for the Field Offices

The State Offices are the lowest organizational level in BLM to have the Honeywell Level 6 minicomputers. Some District Offices and some Resource Areas have personal computers. Also, most District Offices have shared or stand-alone word-processing equipment which can be used for simple ADP functions.

The Washington Office receives its local ADP support from the Eastern States Office, primarily in the form of a communications link to DSC through the ESO Level 6 minicomputer. We found no instance of Washington Office usage of Level 6 applications at ESO. The Washington Office also does not receive operational reports on ADP system operation, utilization, or system development. ADP operations are essentially based at DSC.

BLM uses a large variety of ADP equipment and software in its field offices. As Figure A-2 shows, more than 130 different vendors supply ADP or telecommunications equipment to BLM. The same figure also illustrates that the distribution of these vendors is far from uniform across States and reinforces the observation that a "typical" State profile would not represent any of the actual BLM States. However, the Colorado State Office was chosen as a representatiave sample of a State Office. Figure A-3 illustrates the Colorado ADP equipment configuration showing a data PBX, a Honeywell Level 6, and a Data General computer used for GIS as some State Offices have.

While all existing BLM equipment should be incorporated in BLM's new technical architecture to the extent possible, we will restrict this discussion to the more common equipment currently used within BLM which will have the greatest impact on the subsequent analysis.

Each major component of BLM's ADP equipment inventory will be discussed individually in the following order: central processing units, disk drives and storage, tape drives, terminals, personal computers, and other peripherals.

Figure A-2. BLM Uses 130 ADP and Telecommunications Vendors

System Software	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY
HONEYWELL LEVEL-6														
2780/3780 WKSTN FACILITY	X	X				X	X		X		X			
ADV. ASSSEMBLER	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ADV. COBOL	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ADV. FORTRAN		X		X	X	X		X	X	X				X
BASIC INTERPRETER/COMPILER	X	X		X		X				X				
BSC TRANSPORT FACILITY	X	X				X	X		X		X			
COMM. AND FILE TRANSFER FAC.	X					X	X							
DATA ENTRY FACILITY (DEF-II)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
DM6 TRANSACTION PROCESSOR						X								
GCOS-6, MOD 400, REL 3.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INFO-6	X	X			X	X			X				X	X
OAS DOCUMENT PROCESSING		X				X		X						
OAS RECORDS PROCESSING		X				X		X						
PRODUCTION FACILITY (UPF)	X	X	X	X	X	X	X	X	X	X	X	X	X	X
RMP-6 WITH LHDLC, REF, ETC.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SORT/MERGE	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TPS6 SCREENWRITER		X				X								
IPS6 TRANSACTION PROCESSING		X				X								
Data General														
AOS											X			
AOS/VS OPERATING SYSTEM			X	X								X		X
ASSEMBLER											X			X
BASIC			X	X							X			
COBOL				X							X	X		
CSP												X		
FORTRAN			X	X	X						X	X		X
GCI - GRAPHICS TERMINAL EMULATOR			X											
HASP				X										
IBM RJE EMULATOR					X						X			
IDEA												X		
INFOS II			X		X							X		
PASCAL			X											
RJE80														
RPGII				X										
SORT/MERGE			X	X	X						X	X		X
XODIAC											X			
X.25											X			

Figure A-2. BLM Uses 130 ADP and Telecommunications Vendors (continued)

System Software	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY
Burroughs														
COBOL											X			
OPERATING SYSTEM											X			
SCREENWRITER											X			
SORT/MERGE											X			

Figure A-2. BLM Uses 130 ADP and Telecommunications Vendors (continued)

Vendor	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY	OCCURRENCES
3M			X												1
ADDS			X											X	2
AT&T									X	X					2
Altek				X	X				X						3
Altos		X													1
Anadex			X			X								X	3
Anderson-Jacobson						X	X	X		X		X	X		6
Apple		X								X	X				3
Applicon						X									1
Atlanthus		X						X	X	X	X	X			6
Bendix						X									1
Burroughs	X						X	X	X	X	X			X	7
C.Itoh			X												1
CPS Corp.								X							1
CPI			X												1
Calcomp					X	X						X	X	X	5
Codex		X				X	X	X	X			X	X	X	8
Compaq						X				X	X				3
Computer Devices						X									1
Computer Transceiver Systems					X	X		X					X		4
Contal/3M						X									1
DATA South					X	X	X		X		X		X	X	7
Data Pro								X							1
Data 100						X									1
Data General	X	X	X	X	X	X			X		X	X		X	10
Data Point				X				X		X		X			4
Dest Corp.							X	X						X	3
Diablo				X		X	X								3
Digital			X	X		X	X	X	X		X	X	X	X	10
Digitech						X									1
Dunn Instruments						X			X						2
Dynatech			X												1
ESL Inc.						X									1
Elect. Dev. Inc.								X							1
Epicon						X									1
Epson			X				X	X			X	X	X		6
Execuport		X			X	X	X	X		X	X				7
Florida DATA					X	X	X		X						4
General Data Communications												X			1
General Electric						X		X		X		X			4
Halcyon		X						X			X				3
Hayes		X				X	X				X	X			5
Henco											X				1
Hewlett Packard	X	X	X			X	X				X	X			7
Honeywell	X	X	X	X	X	X	X	X	X	X	X	X	X	X	14
IBM				X	X	X	X	X	X	X	X	X	X	X	11
Int. Data Sci. Inc.							X	X					X		3
International Imaging Systems						X							X		2
Intertec				X	X		X	X				X	X	X	7
K & E						X									1
KAYPRO		X				X	X				X	X			5

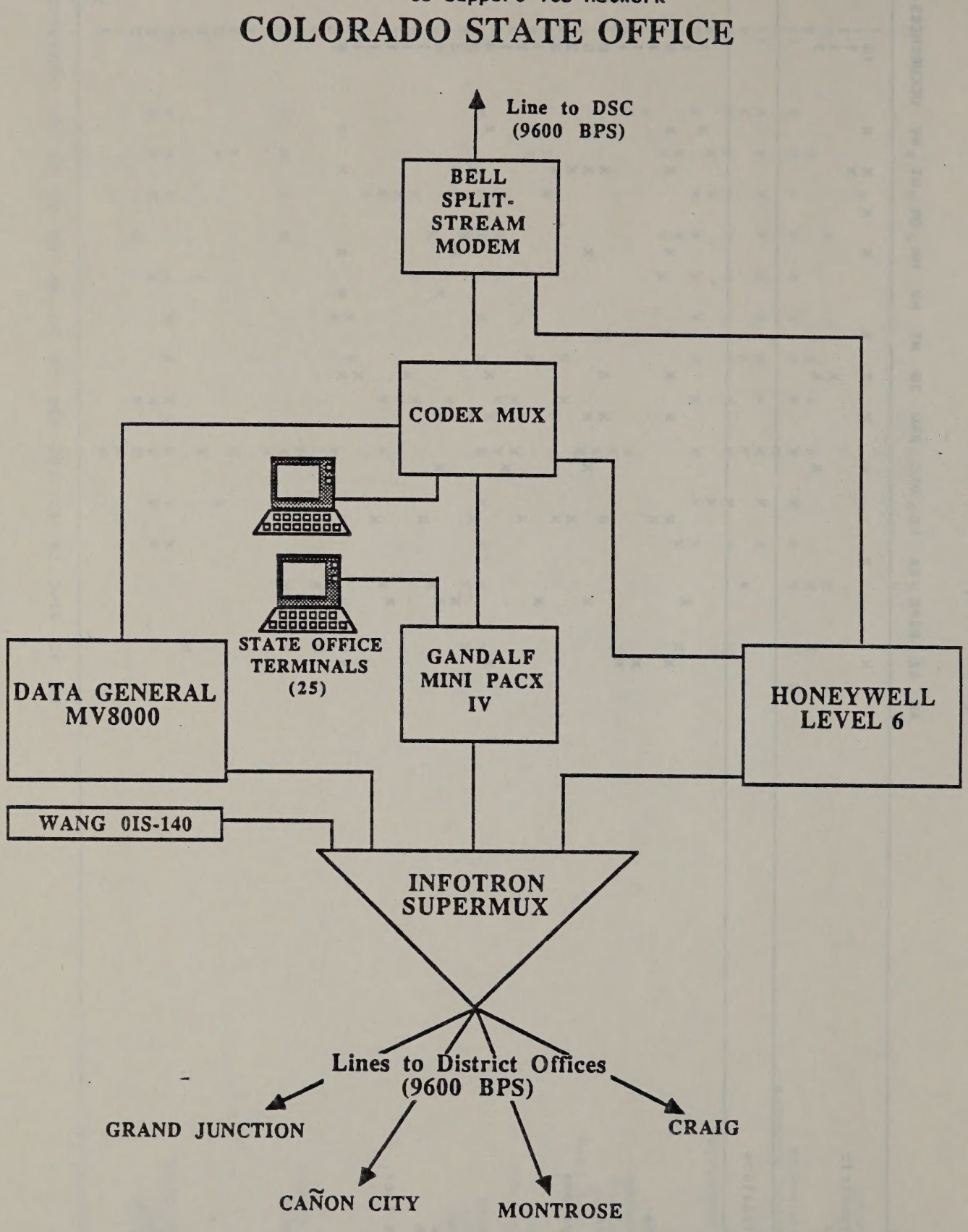
Figure A-2. BLM Uses 130 ADP and Telecommunications Vendors (continued)

Vendor	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY	OCCURRENCES
KYBE						X									1
Kennedy						X									1
Leading Edge						X	X				X				3
Lear Siegler				X	X	X	X			X		X	X	X	8
Mannesmann Tally				X	X	X	X	X	X	X		X	X	X	10
Megatek		X													1
Micoa						X				X					2
Microbec					X								X		2
Modcoap						X							X		2
Monroe								X							1
Moore						X									1
Nicolet/Zeta		X	X		X	X					X	X	X	X	8
Northern Telcon					X	X									2
Northstar		X	X												2
OCLC						X			X						2
Okidata		X						X	X						3
Omnidata												X			1
Osborne			X			X	X					X			4
Penril							X					X			2
Philips							X			X		X			3
Qume			X								X				2
Rocal-Vidac							X								1
Radio Shack		X	X								X	X			4
Ramtek/Oaron		X	X	X	X	X		X	X	X	X	X		X	11
Rixon						X	X				X	X			4
SOROC TECH Inc.						X	X								2
Science Acc.								X					X		2
Sikes												X	X		2
Sola							X	X							2
Spectral Data Corp.						X									1
Sperry-Univac						X									1
Star Micronics						X									1
Summa Graphics						X								X	2
System Ind.														X	1
T-Bar Inc.										X	X		X		3
Talos		X		X							X		X		4
Tandberg				X	X	X	X	X	X	X	X	X		X	10
Techtran Industries					X							X	X		3
Tektronix		X		X	X	X	X	X	X	X	X	X	X	X	12
Teletype			X			X		X		X	X	X		X	4
Televideo				X	X	X	X	X	X	X	X	X	X	X	11
Telex Computer Products						X									1
Texas Instruments	X		X	X	X	X	X	X	X	X	X	X	X	X	13
Topaz		X	X			X	X	X					X		6
Toshiba			X								X				2
Trendata						X									1
U.S. Robotics												X			1
Uarco						X									1
Versalite			X												1
Visual			X		X	X					X	X	X		6

Figure A-2. BLM Uses 130 ADP and Telecommunications Vendors (continued)

Vendor	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY	OCCURENCES
Wang		X		X		X	X	X	X		X	X	X	X	10
Western Telemetric													X		1
Wright Line								X							1
Xerox						X		X							2
Telecommunications															
Bell														X	1
Cernetek			X												1
Codex		X			X		X	X	X		X		X	X	8
Concord Data					X										1
Digilog		X													1
Equinox		X													1
Gandalf Data					X		X	X	X				X		5
Hayes			X			X	X				X		X		5
Infotron Systems					X								X		2
Jacobson					X		X						X		3
Microcoa			X												1
Multi Tech					X		X								2
Oaninux						X									1
Paradyne		X					X	X						X	4
Penril					X		X						X		3
Racal-Milgo			X								X		X		3
Racal/Vadic			X			X	X			X					4
Radio Shack					X										1
Ram								X							1
Synergetics Intl.			X												1
TAC					X										1
UDS								X							1
Ventel		X	X		X			X		X	X		X	X	8

Figure A-3. Colorado utilizes a Codes Multiplexor and a Gandalf PBX to support its network



A.4 Central Processing Units (CPUs)

In the State Offices, BLM operates ADP systems provided primarily by five major manufacturers. Over 20 different CPU product lines, however, are installed as illustrated by Figure A-4. BLM buys CPU resources from outside services as well. This complex mix of equipment complicates the process of providing adequate systems software, ADP staff, supporting peripherals and supplies, and telecommunications to help the users properly utilize the CPUs. As Figure A-5 illustrates for Honeywell and Data General, the systems software operating on each CPU also varies by State. Each manufacturer's equipment will be discussed individually.

For most of the BLM computers, we have provided MIPS (Millions of Instructions Per Second) ratings for the CPUs. Although the MIPS rating of a CPU is a commonly used measure of relative processing power it is not a universal measure of processor speed. MIPS comparisons are only precise for machines using the same instruction set such as models within one product line of a vendor. Internal design can cause one CPU to accomplish with a single instruction what another may accomplish in ten instructions.

- **Data General (DG)** - Data General CPUs are used for Geographic Information Systems and for fire fighting support. BLM uses eight different models of DG CPUs in five States, DSC and BIFC. The most common CPU is the M-600 Eclipse, which is used in two States and DSC for GIS applications. BLM has three models of virtual machines from DG, the MV10000, MV8000, and the MV4000. Virtual machines are CPUs with advanced internal addressing structures which allow for more efficient use of internal CPU memory, particularly among multiple users. The MV8000 is in Colorado; the others are at BIFC and in Alaska. The virtual machines use the AOS/VS operating system. All other models use the AOS operating system. The specific system utilities provided vary by location. The MV10000, located in BIFC to support the fire fighting program and in Alaska for GIS, is the biggest and most powerful of the DG CPUs in BLM with approximately 2.7 MIPS processing speed.

- **Burroughs** - Four models of Burroughs CPUs were listed in the inventories of three State Offices. The Alaska State Office uses a B2700, a midsize minicomputer, and a B4800, a larger midsize minicomputer, to run components of the AALRS Land Recordation System. New Mexico uses a B3185 for the State Fund Control and Accounting System. Wyoming and Montana use a small B94 minicomputer for receipt validation and processing.

- **Hewlett-Packard (HP)** - A HP3000 is located in DSC for image analysis as part of the Remote Sensing support for GIS. It operates under the MPE-V operating system.

  A HP9836 and a HP9845 are located at BIFC to support the fire detection and management software for IAMS. Wyoming uses two HPs, a HP1000 dedicated to micrographics processing and a HP9000 dedicated to coal volumetric analysis. In Oregon, six HP9020s are used to run

Figure A-4. BLM operates over 20 different CPU product lines.

CPUs	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY
Honeywell Level 6 (43)	1													
Honeywell Level 6 (47)					1			1	1		1			
Honeywell Level 6 (57)	1					1			2					1
Level 6 - No Model		2*	1	1			1			1		1	1	
Data General														
MV 10000			1					1						
MV 8000					1									
MV 4000			2											
M/600 Eclipse											1			1
S/20														
9350														
C 150														
C330						1								
Hewlett-Packard														
9836			1											
9845			1									1		
3000					1									
1000														1
9020												6		
9000	1					1								
1220	1													
1236	1													
Burroughs														
B3185											1			
B2700	1													
B4800	1													
B-94									1					1
L99 38-200								1						1
DEC Vax II						1								
Osborne 1 (257747)						1								
Sperry 1800						1								
Spectral Data						1								

*Includes CPU for Phoenix Training Center

Figure A-5. The systems software used on each CPU varies by State Office.

System Software	ALASKA	ARIZONA	BIFC	CALIF.	COLO.	DSC	ESO	IDAHO	MONT.	NEVADA	NEW MEX.	OREGON	UTAH	WYOMING	D.C.
HONEYWELL LEVEL-6															
2780/3780 WKSTN FACILITY	X	X				X	X		X		X				
ADV. ASSEMBLER	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ADV. COBOL	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
ADV. FORTRAN		X		X	X	X		X	X	X				X	
BASIC INTERPRETER/COMPILER	X	X		X		X				X					
BSC TRANSPORT FACILITY	X	X				X	X		X		X				
COMM. AND FILE TRANSFER FAC.	X					X	X								
DATA ENTRY FACILITY (DEF-II)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
DM6 TRANSACTION PROCESSOR						X									
GCOS-6, MOD 400, REL 3.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
INFO-6	X	X			X	X			X				X	X	
OAS DOCUMENT PROCESSING		X				X		X							
OAS RECORDS PROCESSING		X				X		X							
PRODUCTION FACILITY (UPF)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
RNP-6 WITH LHDLC, REF, ETC..	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
SORT/MERGE	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TPS6 SCREENWRITER		X				X									
TPS6 TRANSACTION PROCESSING		X				X									
Data General															
AOS/VS OPERATING SYSTEM			X	X							X	X		X	
ASSEMBLER											X			X	
BASIC			X	X							X				
COBOL				X							X	X			
CSP												X			
FORTRAN			X	X	X						X	X		X	
GCI - GRAPHICS TERMINAL EMULATOR			X												
HASP				X											
IBM RJE EMULATOR					X						X				
IDEA												X			
INFOS II			X		X							X			
PASCAL			X												
RJE80															
RPGII				X											
SCREENWRITER											X				
SORT/MERGE			X	X	X						X	X		X	
USER PRODUCTION FACILITY											X				
Burroughs															
COBOL											X				
OPERATING SYSTEM											X				
SCREENWRITER											X				
SORT/MERGE											X				

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sophisticated forest modeling software provided by the Forest Service. The HP9000 series all use the HP UX operating system. The HP1000 uses the HP RTE operating system.

A.5 Disk Drives and Storage

State Offices and BIFC use permanent and removable disk packs to store data, system software, and applications software. The disk drives on which these disk packs are mounted determine the on-line disk capacity of the BLM ADP systems.

As Figure A-6 illustrates, the States over 20 models of disk drives to support their data storage requirements. All but one disk drive model are from the same vendor as the CPU they support. This is not unusually high given that BLM has five CPU manufacturers and differences in drive models may be slight. For example, a Honeywell MSU 9104 is a Honeywell MSS 9104 without a disk controller; it would usually be a slave disk controlled by an MSS 9104 master. Seventy-four drives were identified with a total on-line capacity of approximately 16,600 Megabytes (Mb). The New Mexico State Office reported the most drives (9) and Nevada State Office reported the fewest (2).

The States use five different disk drive models, to support the Honeywell Level 6s. Over half are Honeywell MSS 9104s or MSU 9104s. Each 9104 provides 256Mb of data storage capacity. Each location listed at least one MSS 9104 or MSU 9104. Most State Offices listed two 9104s. The remaining drives supporting the Level 6s are Honeywell CDS 9116 or CDU 9116 Cartridge Tape drives which use smaller 10Mb cartridges for data storage. As with the 9104s, the CDS 9116 has a controller and the CDU 9116 does not. Ten of the 12 State Offices and BIFC listed a CDU or CDS 9116.

For Data General, the State Offices use five Data General models for 24 drives, and two System Industries 9751 disk drives. The most common model is the DG 6061, which provides 192Mb of storage capacity. The DG 6236 drive is used by the Colorado and New Mexico State Offices. It provides 354Mb of storage. In addition to the DG 6061, the Wyoming State Office uses a DG 6122 with 277Mb.

For the Burrough's B-94 CPU in the Wyoming State Office, one Burrough's B9493-20 disk drive provides 20Mb of data storage capacity. In the New Mexico State Office, a Burrough's B7318 drive supports their B3185 CPU. Alaska has the largest bank of Burrough's disk drives with four B9494 drives (207Mb each) and one B9484 drive (206Mb).

Figure A-6. BLM uses about 20 models of disk drives in the State Offices.

Manufacturer Models	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY	TOTAL
DATA GENERAL															
No model								1							1
6061 - 192 M				3	2	4					3	3		1	16
6122 - 277 M														1	1
6236 - 354 M					1						2				3
6237 -1062 M			1												1
6160 -73 M			1												1
6239-529M											1				
HONEYWELL															
MSU 501						5									5
MSU 451						44									44
CDS 9116 - 10 MB Cartridge with Controller	1	1		1	1		1		1			1	1		8
CDU 9116 - 10 MB Cartridge with Disk			2					2						1	5
MSS 9104 - Disk Drive with Controller (256M)	1	2	1	1		3	1	3	1		2	1	1		17
MSU 9104 - Disk Drive w/o Controller (256M)	1	2		2	1		1		2	2	1	1	1	2	16
MSS 9100															
MSU 9619 - with Controller															
HEWLETT PACKARD															
7905						1									1
7914						2									2
7925						6									6
TEKTRONICS 4907														1	1
WANG 6565														1	1
XEROX						1									1
SPERRY UNIVAC CMC 1225						2									2
DIABLO 31						2									2
System Ind. 9751 Disk Drive														2	2
BURROUGHS															
B9493-20 Disk Drive														1	1
B7318 Disk Drive											1				1
B9494 - 207 M	4														4
B9484 - 206 M	1														1

A.6 Tape Drives

Magnetic tape technology improvements have increased tape densities and the number of tracks available on a tape to improve data storage capacity on magnetic tape. The higher the (BPI) bytes per inch and the number of tracks on the tape the more data a tape drive can store. The tape drives used must be designed to read specific tape densities and number of tracks. Nine-track technology is still widely used. Seven-track technology became obsolete over ten years ago. Current technology for nine-track tape is 6250 BPI. State of the art technology provides tape cartridges with 15,000 BPI and over 30 tracks.

As Figure A-7 illustrates, BLM's State Offices are supported by 11 vendors for approximately 64 tape drives overall. Of these, about half are nine-track, dual density tape drives which can read 800 BPI or 1600 BPI tapes. Three are nine-track 800 BPI drives. Three more are older seven-track 800 BPI drives. Some tape drives had insufficient information to determine their precise characteristics although their model numbers indicated they were most likely older models. DSC had the greatest variety, supporting drives from nine different vendors. The following is a breakdown by major vendor.

Eight of the 13 tape drives used for the Data General are Data General model 6026s; one is a model 4307H; and one is a model 6023 which is nine-track - 800 BPI, and one is a 1600/6250. Two are 6021 9 track 800 BPI drives. All of the locations using DG equipment have at least one tape drive which could use nine-track, 800 BPI tape.

For Burroughs equipment, Alaska State Office has installed four B9495 nine-track tape drives with a B9499 tape controller. The Wyoming and New Mexico State Offices did not report any tape drive support for their Burroughs equipment.

Figure A-7. Most of BLM's tape drives are nine-track, dual density drives.

Manufacturer Models	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY	TOTAL
Data 100-8202						2									2
DATA GENERAL															
6021 Tape Drive - 9 Track 800 BPI						1									2
6026 Tape Drive - 9 Track 800/1600 BPI			2	1	2	1					2			1	8
4307H Tape Drive			1												1
6023 Tape Drive - 9 Track 800 BPI				1											1
1600/6250 Tape Drive														1	1
HONEYWELL															
No model												2			2
9 Track MTU 9109 - 9 Track 800/1600BPI	2	1	1	2	2		2	2	2		2		1	2	19
MTC 9102 - Mag. Tape Cont. & Device Pac	1	1		1			1						1		5
7 Track MTU 9101 - Mag. Tape Controller										2					2
7 Track MTU 912 - 7 Track Tape Drive		1													1
MTC 9101		1													1
MTU 503						8									8
BURROUGHS															
B9495 - 9 Track 800/1600 BPI	4														4
HEWLETT PACKARD															
7970 - E						1									1
7970 - B						1									1
DEC VAX II															
Cartridge						1									1
MONROE - 39 2RW								1							1
WANG 6529														1	1
SPERRY UNIVAC TP13160						1									1
NORTHERN TELECOM SERIES 70						1									1
KENNEDY - 9800						1									1

A.7 Terminals and Teletypes

As Figure A-8 illustrates, the State Offices and DSC have 70 terminal and teletype models, 45 of which are present in at least one State Office. Of these 45 models, nineteen exist in only one of the State Offices. Of the 12 State Offices and BIFC, nine locations have a terminal model which does not exist at any other BLM location. Figure A-9 illustrates the distribution of terminals based on the number of locations in which a terminal model was listed. None of the 70 models exist in more than 12 locations. Over three-fourths of the terminal models occur in less than four locations.

One result of this proliferation of terminals is the problem of using and providing training for specific terminal types. Terminal keyboards are often different both in functions available and in the location of keys used to invoke terminal functions. Users must be trained to find the correct keys. Support staff must also be trained to learn the specifics of each terminal type. Unfortunately, this knowledge also has minimal transferrability to other locations since their compliment of terminals (and other equipment) is likely to be different. Therefore, any physical transfer of staff involves retraining.

A significant portion of the application software at DSC also depends on specific terminal characteristics to provide some terminal functions to the user. Since not all terminals support this functionality, the efforts of the DSC support staff are diluted by each incompatible terminal. BLM modifies the application software to support each new type of terminal. To avoid wasting scarce staff time, these modifications are not done for every unique terminal model. As a result, only specific terminals models can be used to run specific applications. Also, telecommunications protocols for specific hardware vendors are often simulated by off-brand terminal manufacturers but not exactly duplicated so that unusual and seemingly unpredictable communication failures occur.

Figure A-8. BLM has 70 terminal models; none in more than 12 locations.

TERMINALS AND PERIPHERALS	ALASKA	ARIZONA	BIFC	CALIF.	COLO.	DSC	ESO	IDAHO	MONT.	NEVADA	NEW MEX.	OREGON	UTAH	WYOMING	TOTALS	OCCURENCES
Terminals																
ADS Viewpoint			5											3	8	2
Andek			1												1	1
Anadex			2												2	1
Beehive Micro-B					1		1						1	2	5	4
Burroughs MT985														4	4	1
CTS 3000					3	2				6					11	3
CTS 3250						1									1	1
CTS 3810						18							3		21	2
CTS 4000					4			1					3		8	3
Codex 47850													1		1	1
Computer Devices						1									1	1
Comtal Workstation						1									1	1
DEC LA-100						1				12				5	18	3
DEC LA-120		16	3	1		22	4			5	21	26		17	115	9
DEC LA-36				2		2				8					12	3
DEC T1220				7	23			12	8				15		65	5
DEC T300				1		1							5		7	3
DEC VT100						1									1	1
Data 100						1									1	1
Data General 6040						1									1	1
Data General 6051						1	1								2	2
Data General 6053				6		6					9			1	22	4
Data General D200					4									1	5	2
Data General D410												8			8	1
Data General Dasher												4		2	6	2
Data General VIS500										2					2	1
Datapoint												1			1	1
Execuport							1								1	1
General Electric					6				3	1		1			11	4
HP 2392A						1	3								4	2
HP 2621					1									1	2	2
HP 35741A						4	2								6	2
Honeywell (misc.)	114														114	1
Honeywell 7811						7									7	1
Honeywell VIP 7201								5							5	1
Honeywell VIP 7205			1	4	12	8	4	3	8	8	6	4	5	5	68	12
Honeywell VIP 7305	6		1		7		4		2						14	5
Honeywell VIP 7801				5		1	4	2	8	4	15		2	12	53	9
Honeywell VIP 7813	20	60		6		9	2		4	3	26		9	2	121	10
IBM 3178												1			1	1
Int I Imaging Systems Workstation						1									1	1
Lear Siegler ADM-22													1		1	1
Lear Siegler ADM-3					2	8				7				3	20	4
Lear Siegler ADM-42		1													1	1
Lear Siegler ADM-5				1								1	1	1	4	4
Lear Siegler V-203													5		5	1
Northern Telecom					1										1	1
OCLC						2			1						3	2
Qume 8025		1		11	9		1	4	4	6	5	23	9	7	93	12
Zentec 8130			1		14		3	7	2				1		30	7
Soroc			2			1									3	2

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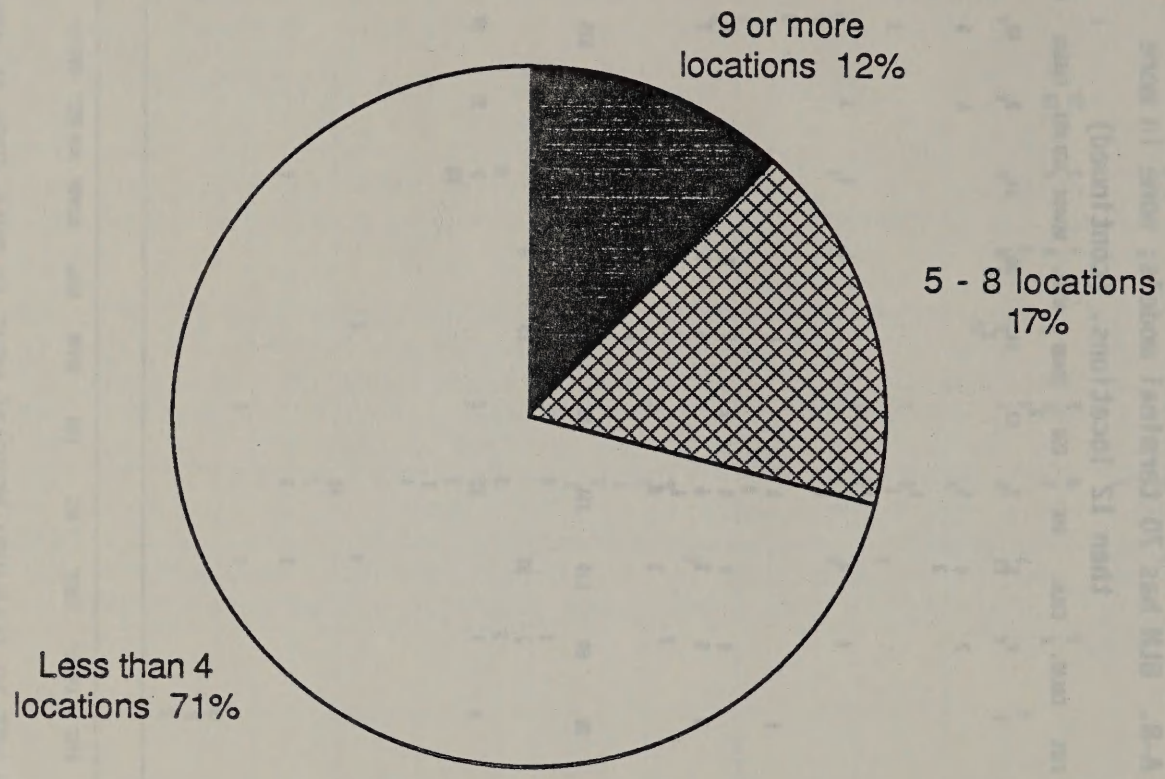
Figure A-8. BLM has 70 terminal models; none in more than 12 locations. (continued)

TERMINALS AND PERIPHERALS	ALASKA	ARIZONA	BIEL	CALIF.	COLO.	DSC	ESO	IDAHO	MONT.	NEVADA	NEW MEX.	OREGON	UTAH	WYOMING	TOTALS	OCCURENCES
Superbrain							2								2	1
Tanberg TBV 220S				9	5	2	12	24	30	14	2	42	15	29	184	11
Tektronix 4010 (G)								1							1	1
Tektronix 4014-4 (G)				2	4	5					6	5	1	3	26	7
Tektronix 4016-1 (G)					2								1	2	5	3
Tektronix 4017						1									1	1
Tektronix 4025						1						1			2	2
Tektronix 4052						1									1	1
Tektronix 4054 (G)		1		4	4				4	1	1			6	21	7
Tektronix 4106						1									1	1
Tektronix 4114 (G)								1						1	2	2
Teletype TTY43			1			1		1						7	10	4
Televideo 920						3									3	1
Televideo 950				4	4	5	2	2	5	1		1	5	20	49	10
Texas Instruments	1		3	5	2	6		4	1			7	2		30	9
Trendata 4000						1									1	1
Visual 110					2	8					1		1		12	4
Xerox								1							1	1
Totals	141	79	20	68	110	151	45	68	80	78	92	125	86	134	1250	213

Figure A-9. Seventy-one percent of BLM terminal models exist in less than four locations.



A.8 Personal Computers

The use of personal computers or microcomputers in BLM is increasing. In the State Office equipment inventories, over 400 microcomputers were included, representing 20 vendors. Recently the Philips microcomputer was awarded the BLM microcomputer contract and selected as the BLM standard. It is an IBM-compatible microcomputer and the 21st micro vendor. The Vendors and the distribution of their products in BLM are illustrated by Figure A-10. The most common microcomputer is the Wang PC with 155 machines. This is due partly to the ease at BLM of acquiring a Wang PC. They are acquired through the office automation equipment contract as a word-processing and microcomputing workstation. This is a common combination of equipment functions, in government and industry, and becoming more common as the distinction between office automation and computing continues to blurr.

BLM uses these 82 Philips PCs which are IBM look-alikes. MS-1 will be downloaded to the Philips from the USGS Multics in October, 1986.

There are 32 Northstar Advantage PCs in BIFC linked with a LAN configuration and used primarily for office automation functions. They are located at strategic Fire Centers.

Another common PC at BLM is the IBM PC-XT with 10 machines. It is liked due to the its processing power and the amount of software available for it. In particular, Minerals analytical programs are used on the IBM-XTs which cannot realistically run on the PCs. The PC is theoretically IBM-compatible but the specific software used by BLM in Minerals does not work on the PC.

Figure A-10. More than 20 microcomputer vendors were listed by the State Offices.

VENDORS	AK	AZ	BIFC	CA	CO	DSC	ESO	ID	MT	NV	NM	OR	UT	WY
Apple		2	3								2			
AT & T					1									
Beehive									1					6
Burroughs Micro								1	1					1
Compaq				1				3			2			
Data General 10; 20; 30					1	9			3	2	1	2		3
DEC Rainbow						1						1		
Hewlett Packard	3													
IBM														
PC				3		2	3							
XT				4	1	1	2				2		1	5
PC JR											3			
Intertec Superbrain				4	2		3	1			5	4	1	1
Kaypro		2				1	1					2		
Northstar			32											
Osborne			3											
Philips		20		15	15			2			8	15	7	
Sango					1									
Tandy 100											2			
TRS-80												21		
Tektronics		1		4					3				3	
Versalite			1											
Victor						1								
WANG PC		8		27		2	3	12	14	9	5	62	11	2
WANG 2200						1		1			11			

A.9 Printers, Plotters, Digitizers, and Other Peripherals

As Figure A-11 illustrates, peripherals within the State Offices have proliferated in the same way as terminals. Seventy-six models of printers, plotters, digitizers, and other peripherals were listed on the State Office and DSC inventories. About 50 of these models were represented in the State Offices alone. As Figure A-11, shows, 43 of these models occurred in only one BLM location. Of the 12 State Offices and BIFC, 33 locations had unique equipment models not listed by any other BLM site. The number of peripherals and peripheral models ranged from 12 peripherals and 10 models in the Arizona State Office to 116 peripherals encompassing 13 models in the Oregon State Office.

These models are not unique pieces of equipment, just unique models or vendors. For example, 30 different models of printers, eight models of digitizers, and six models of plotters were listed.

Multiple models of similar or equivalent peripherals create support and supply problems. Support staff must be trained in the day-to-day maintenance of each model of peripheral and supplies stocks for each must be ordered and maintained separately. They also increase the likelihood of obsolescence.

Figure A-11. BLM operates over 75 models of peripherals.

TERMINALS AND PERIPHERALS	ALASKA	ARIZONA	BIFC	CALIF.	COLO.	DSC	ESO	IDAHO	MONT.	NEVADA	NEW MEX.	OREGON	UTAH	WYOMING	TOTALS	OCCURENCES
Peripherals																
A.M. Varityper Photocomposer													1		1	1
AlanThus Disk Unit												1			1	1
Altek Digitizer				1	1				1				1	3	7	5
Altek Tape Unit									1						1	1
Anadex Printer			1			3			3					3	10	4
Anderson/Jacobsen Input Console								1							1	1
Applicon Plotter						1									1	1
Burroughs Printer	2							1			1				2	3
C.Itoh Printer			4												4	1
CTS Printer						1									1	1
Calcomp Digitizer		1	1		2	2								6	12	5
Calcomp Plotter		1	1		1	4						7		4	18	6
Compuscan OCR												1			1	1
DEC Letterwriter 100			1												1	1
DEC Printer						2							1		3	2
Data 100 Digitizer						1									1	1
Data General Printer											1				1	1
Data General Tape Drive											1				1	1
Data South Printer					1	4			4		2		2	10	23	6
Data Tech Graphics Processor						1									1	1
Diablo Printer				1		1									2	2
ESL Array Processor						1									1	1
Eaton Printer													5		5	1
Enter Graphics Printer						1									1	1
Epson Printer			8				2	1	1			4	4		20	6
Florida Data Printer					2	1							1	1	5	4
GE Printer						1		1							2	2
HP Digitizer		1				1									2	2
HP Plotter						1						2			3	2
HP Printer	5					1									1	2
Het Card Reader	4		1												1	2
Hitachi HDD 3648						1									1	1
Honeywell Mag-Tape Unit	3	1					2								3	3
Honeywell Printer	73		6			2	3		3	2	2		2		20	8
IBM Card Punch					1										1	1
KIE Digitizer						1									1	1
Leading Edge Printer						4									4	1
Megatek Graphics System		3													3	1
Micro Peripheral Printer									1						1	1
Monroe Calculator								2							2	1
Monroe Printer								1							1	1
Monroe Tape Unit								1							1	1
Moore Decollator						1			1				1		3	3
NES Springwriter 7710							1								1	1
Nicolet Zeta Plotter		1	1	1	1	1			1	1	1	1	1	1	11	11
Nicolet Zeta Tape Controller		1							1						2	2
Northern Telecom Card Punch						1									1	1
Northern Telecom Printer						1									1	1
Northern Telecom KIE Unit															1	1
Northern Telecom Tape Drive					1										2	2
Numonics Graphics Calculator													17		17	1
Okidata Printer				8				1	1			5			15	3

As of 3/86

A-11. BLM operates over 75 models of peripherals. (continued)

TERMINALS AND PERIPHERALS	ALASKA	ARIZONA	BLFC	CALIF.	COLO.	DSC	ESO	IDAHO	MONT.	NEVADA	NEW MEX.	OREGON	UTAH	WYOMING	TOTALS	OCCURENCES
Omnidata Cassette reader									1				1		2	2
Omnidata Polycorder												53			53	1
Qume Printer			1										1		2	2
Racal-Milgo Printer			1												1	1
Rigs/Anadex Printer			1												1	1
Science Acc. Digitizer								1							1	1
Sikes Disk Unit												1			1	1
Star Micronics Printer						4									4	1
Stnd Register Burster													1		1	1
Summagraphics Digitizer Controller						1								1	2	2
Tally Mannesmann Printer				9	3	2	10	16	25	13		33	15	15	141	10
Talos Digitizer		1		2									1		4	3
Tektronics Hard Copier		1		3	10	5		2	3			3	2	8	37	9
Tektronix Graphic Input Device		1		2	1	1				1		3	1	1	11	8
Tektronix Graphics Systems													1		1	1
Tektronix Plotter				1		1				1		3	1		7	5
Teletype Printer			1												1	1
Telex Tape Drive						1									1	1
Texas Instrument Printer			2		13	4				1			2	2	24	6
Texas Instrument Printer/Plotter									2						2	1
Toshiba Printer			1												1	1
Uarco Burster						1									1	1
Versatec Plotter						1								1	2	2
Wang Printer								5			15				20	2
Totals	87	12	31	27	36	62	10	33	48	19	23	116	60	53	538	173

A.10 Detailed Equipment Inventories

The following pages contain detailed ADP equipment inventories for each BLM facility (in alphabetical order).

ALASKA DETAILED INVENTORY

As of 3/86

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
BURROUGHS	2645VN	CIRCUIT-SYNC-2400	1
BURROUGHS	276-0446	CIRCUIT-SYNC-POLL-2400	1
BURROUGHS	276-0826	CIRCUIT-ASYNC-TTY-300	1
BURROUGHS	276-0834	CIRCUIT-ASYNC-TTY-300	1
BURROUGHS	276-0847	CIRCUIT-ASYNC-POLL-1200	1
BURROUGHS	276-3016	CIRCUIT-ASYNC-TTY-1200	1
BURROUGHS	276-3017	CIRCUIT-ASYNC-TTY-1200	1
BURROUGHS	276-4652	CIRCUIT-ASYNC-TTTY-300	1
BURROUGHS	276-4653	CIRCUIT-ASYNC-TTY-300	1
BURROUGHS	276-5788	CIRCUIT-SYNC-BSC-4800	1
BURROUGHS	276-8650	CIRCUIT-ASYNC-TTY-1200	1
BURROUGHS	276-8651	CIRCUIT-ASYNC-TTY-1200	1
BURROUGHS	3571VN	CIRCUIT-SYNC-2400	1
BURROUGHS	3572VN	CIRCUIT-SYNC-2400	1
BURROUGHS	3573VN	CIRCUIT-SYNC-2400	1
BURROUGHS	3574VN	CIRCUIT-SYNC-2400	1
BURROUGHS	3615VN	CIRCUIT-ASYNC-2400	1
BURROUGHS	4191VN	CIRCUIT-SYNC-2400	1
BURROUGHS	B1-4 IC	MEMORY	6
BURROUGHS	B4000	FORTRAN COMP	1
BURROUGHS	B4000-FLM	FLAME	1
BURROUGHS	B4096-8	I/O CABINET	1
BURROUGHS	B4099-8	FLOATING PT.	1
BURROUGHS	B4100-9	IC MEMORY	1
BURROUGHS	B4246-81	PRT. CONTROL	1
BURROUGHS	B4303-8	B874 DLP	1
BURROUGHS	B4304-8	DLP DISK PK	4
BURROUGHS	B4342-8	CONSOLE	1
BURROUGHS	B4395-82	MTU DLP	2
BURROUGHS	B4885	CPU SYSTEM	1
BURROUGHS	B551-1	DIRECT CONECT DUAL ADAPTOR	1
BURROUGHS	B551-6	DATA SET CON	9
BURROUGHS	B74-1	MEM. EXPANSION	1
BURROUGHS	B874	NET DEF LANG	1
BURROUGHS	B874-4	SYST & COMM CTL	1
BURROUGHS	B9115	CARD READER	1
BURROUGHS	B9246-15	PRINTER	1
BURROUGHS	B9246-20	PRINTER	1
BURROUGHS	B9387-47	DISK CONTLR	1
BURROUGHS	B9484-51	206 DISK PK	1
BURROUGHS	B9494-44	207 DISK DRV'S	1
BURROUGHS	B9495-3	TAPE DRIVE	4
BURROUGHS	B9499-14	TAPE EXCHGE	1
BURROUGHS	B999-2	NRZ OPTION	4
BURROUGHS	DIRECT	CIRCUIT-ASYNC-9600	1
BURROUGHS	MC7 B4000	MESS CNTL	1
BURROUGHS	SRI	EDITOR	1
HEWLETT PACKARD	(36") 7585B	PLOTTERS	1
HEWLETT PACKARD	-------	MODEL (ACCESS DG)	1
HEWLETT PACKARD	1220	CPU	1
HEWLETT PACKARD	1236	CPU	1
HEWLETT PACKARD	2631B	PRINTER	3
HEWLETT PACKARD	2932A	PRINTER	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HEWLETT PACKARD	7470A (9 X 11)	PLOTTERS	1
HEWLETT PACKARD	7580A	PLOTTERS	2
HEWLETT PACKARD	7580B	PLOTTERS	1
HEWLETT PACKARD	82901M	FLEXIBLE DISK DRIVE	3
HEWLETT PACKARD	85 SERIES	MICROCOMPUTERS	3
HEWLETT PACKARD	9000 SERIES	CPU	1
HEWLETT PACKARD	9134	HARD DISK WINCHESTERS	2
HONEYWELL		TERMINAL RMT00	1
HONEYWELL		TERMINAL GEN00	1
HONEYWELL	---	PRINTER - ASO OIL & GAS	4
HONEYWELL	---	PRINTER - ASO DEAN CRABBS	1
HONEYWELL	0000	TERMINALS - ADO PUBLIC ROOM	1
HONEYWELL	0174	PRINTER - ASO ANCSA - BRISTOL	1
HONEYWELL	0175	PRINTER ASO T & LS	1
HONEYWELL	0176	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0177	PRINTER - ASO STATE SELECTIONS	1
HONEYWELL	0178	PRINTER - ASO PUBLIC ROOM	2
HONEYWELL	0180	PRINTER	1
HONEYWELL	0182	PRINTER - ASO STATE SELECTIONS	1
HONEYWELL	0183	PRINTER - ADO PUBLIC ROOM	3
HONEYWELL	0184	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0185	PRINTER - ASO DOCKET ROOM	1
HONEYWELL	0186	PRINTER - FDO ADJUDICATION	1
HONEYWELL	0187	PRINTER - ASO L&MO (OIL & GAS)	1
HONEYWELL	0188	PRINTER - ASO STATE SELECTIONS	1
HONEYWELL	0191	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0194	PRINTER - FDO PUBLIC ROOM	1
HONEYWELL	0305	PRINTER - FDO ARCTIC - KOBUK RA	1
HONEYWELL	0391	PRINTER - ASO OIL & GAS	1
HONEYWELL	0509	TERMINALS - FDO ADJUDICATION	1
HONEYWELL	0510	TERMINALS - ASO ANCSA - SEA AK	1
HONEYWELL	0511	TERMINALS - ASO OIL & GAS	1
HONEYWELL	0512	TERMINALS ADP OPERATIONS	1
HONEYWELL	0513	TERMINALS - FDO DOCKET	1
HONEYWELL	0514	TERMINALS - ASO DEAN CRABBS	1
HONEYWELL	0514	TERMINALS - ADP OPERATIONS	1
HONEYWELL	0515	TERMINALS - ASO OIL & GAS	1
HONEYWELL	0516	TERMINALS - ASO STATE SELECTIONS	1
HONEYWELL	0519	TERMINALS	1
HONEYWELL	0522	TERMINALS - FDO PUBLIC ROOM	1
HONEYWELL	0524	PRINTER - FDO DOCKET	1
HONEYWELL	0524	TERMINALS - FDO PUBLIC ROOM	1
HONEYWELL	0527	ASO NATIVE ALOTMENT	1
HONEYWELL	0529	TERMINALS - ASO PUBLIC ROOM	1
HONEYWELL	0530	TERMINALS - ASO PHOTOGRAMMETRY	1
HONEYWELL	0533	TERMINALS - ASO DOCKET ROOM	1
HONEYWELL	0558	TERMINALS - ADP OPERATIONS	1
HONEYWELL	0562	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0666	PRINTER - ADO PUB COUNTER	1
HONEYWELL	0684	PRINTER - ADP OPERATIONS	1
HONEYWELL	0685	PRINTER - ADP OPERATIONS	1
HONEYWELL	0687	PRINTER - ASO L&MO	1
HO[illegible]ELL	0688	PRINTER - [illegible] SWITCH BOARD	1
HO[illegible]ELL	0690	PRINTER - [illegible] STATE LANDS	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	0692	FDO PUBLIC ROOM	1
HONEYWELL	0693	PRINTER - ADO PENINSULA RA	1
HONEYWELL	0694	PRINTER - ASO ANCSA - DOYON	1
HONEYWELL	0695	PRINTER - ASO L&MO	2
HONEYWELL	0697	PRINTER - ADO MCGRATH RA	1
HONEYWELL	0698	PRINTER - ASO ANCSA - SEA AK	1
HONEYWELL	0699	PRINTER ASO L&MO	1
HONEYWELL	0700	PRINTER - FDO ADJUDICATION	1
HONEYWELL	0701	PRINTER - ADP OPS A B SWTCH BOX	1
HONEYWELL	0701	ADP OPERATIONS	1
HONEYWELL	0702	PRINTER - ADP OPERATIONS	1
HONEYWELL	0703	PRINTER - FDO UKON RESOURCES	1
HONEYWELL	0705	PRINTER - ASO NATIVE ALOTMENT	1
HONEYWELL	0706	PRINTER - ASO ANCSA DOCKET	1
HONEYWELL	0707	PRINTER FDO FIRE LOGISTICS	1
HONEYWELL	0708	PRINTER - ASO CAD SURVEY	1
HONEYWELL	0788	PRINTER - ADP OPERATIONS	1
HONEYWELL	0789	PRINTER - FDO DOCKET	1
HONEYWELL	0791	PRINTER - ADP OPERATIONS	1
HONEYWELL	0792	PRINTER - ASO OIL & GAS	2
HONEYWELL	0793	PRINTER - ADO PUBLIC ROOM	1
HONEYWELL	0794	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0795	PRINTER - ASO RESOURCES	2
HONEYWELL	0797	PRINTER - ADP OPERATIONS	1
HONEYWELL	0799	PRINTER - ASO PUBLIC ROOM	1
HONEYWELL	0802	PRINTER - ADP OPERATIONS	1
HONEYWELL	0804	PRINTER - ASO DOCKET ROOM	1
HONEYWELL	0826	TERMINALS	1
HONEYWELL	0844	TERMINAL ADP OPERATIONS	1
HONEYWELL	0850	PRINTER - ASO L&MO (OIL & GAS)	1
HONEYWELL	0850	TERMINALS - FDO DOCKET	1
HONEYWELL	0851	PRINTER - FDO PBULIC ROOM	1
HONEYWELL	0851	TERMINALS - ASO L&MO (OIL & GAS)	1
HONEYWELL	0852	TERMINALS - ADP OPERATIONS	1
HONEYWELL	0853	TERMINALS - ASO PUBLIC ROOM	1
HONEYWELL	0854	TERMINALS AD POPS A B SWTCH BOX	3
HONEYWELL	0855	TERMINALS - ASO CAD SURVEY	1
HONEYWELL	0857	TERMINALS - ADO MCGRATH RA	1
HONEYWELL	0858	TERMINALS - ASO PUBLIC ROOM	1
HONEYWELL	0859	TERMINALS - FDO ADJUDICATION	1
HONEYWELL	0860	TERMINALS - ADP OPERATIONS	1
HONEYWELL	0861	TERMINALS - ADP OPERATIONS	2
HONEYWELL	0862	TERMINALS - ASO ANCSA DOCKET	1
HONEYWELL	0862	TERMINALS - ASO L&MO	1
HONEYWELL	0864	TERMINALS - FDO RECORDS	1
HONEYWELL	0863	TERMINALS - ASO PUBLIC ROOM	1
HONEYWELL	0865	TERMINALS - ADO PENINSULA RA	1
HONEYWELL	0866	TERMINALS - FDO ARCTIC - KOBUK RA	1
HONEYWELL	0867	TERMINALS - ASO RESOURCES	1
HONEYWELL	0869	PRINTER - ASO L&MO	1
HONEYWELL	0869	TERMINALS	3
HONEYWELL	0872	TERMINALS - ASO STATE SELECTIONS	1
HONEYWELL	0873	TERMINALS - ASO STATE SELECTIONS	1
HONEYWELL	1991	TERMINALS - FDO SWITCH BOARD	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	3016	TERMINALS - ASO L&MO	1
HONEYWELL	3017	TERMINALS - ASO OIL & GAS	2
HONEYWELL	3284	TERMINALS - 0788	1
HONEYWELL	3982	TERMINALS - FDO YUKON RESOURCES	1
HONEYWELL	3983	TERMINALS - ADO UPB COUNTER	1
HONEYWELL	3984	TERMINALS	2
HONEYWELL	3988	TERMINALS - ASO ANCSA - BRISTOL	1
HONEYWELL	3989	TERMINALS - ASO ANCSA - DOYON	1
HONEYWELL	3990	TERMINALS - ASP AMCSA - EASEMENTS	1
HONEYWELL	3991	TERMINALS - FDO FIRE LOGISTICS	1
HONEYWELL	3992	TERMINALS - ASO T & LS	1
HONEYWELL	3993	TERMINALS - ADO PUBLIC ROOM	1
HONEYWELL	3994	TERMINALS - ASO L&MO (OIL & GAS)	1
HONEYWELL	3995	TERMINALS - ASO OIL & GAS	1
HONEYWELL	3996	TERMINALS - ASO L&MO	2
HONEYWELL	3997	TERMINALS	2
HONEYWELL	3998	TERMINALS - FDO PUBLIC ROOM	1
HONEYWELL	4003	TERMINALS - ASO L&MO	1
HONEYWELL	69320	PRINTER - ADP OPERATIONS	1
HONEYWELL	7075	TERMINAL APRT1	1
HONEYWELL	7170	TERMINAL APRT3	10
HONEYWELL	7175	TERMINAL OPU01	1
HONEYWELL	7200	TERMINAL CONSOLE	2
HONEYWELL	7270	TERMINAL	1
HONEYWELL	7305	TERMINAL	6
HONEYWELL	7813	TERMINAL APROP	20
HONEYWELL	BLKBX	TERMINAL FITTY	1
HONEYWELL	CA89003	KIT LOWER FRONT DOOR	1
HONEYWELL	CA89003	HD BASIC CABINET	1
HONEYWELL	CA89003	KIT CABLE TROUGH	1
HONEYWELL	CA89003	80 INCH RACK - CABINET	1
HONEYWELL	CA89012	KIT TAPE DOOR	1
HONEYWELL	CA89012	60 INCH EXPANSION CABINET	1
HONEYWELL	CA89012	KIT HD MULTI CAB	2
HONEYWELL	CA89012	HD EXPANSION CAB	1
HONEYWELL	CA89037	60 INCH EXPANSION CABINET	1
HONEYWELL	CA89037	CABINET EXPANSION HD	1
HONEYWELL	CA89037	KIT FILLER PANEL 1.7	1
HONEYWELL	CA89037	KIT FILLER PANEL 5.2	1
HONEYWELL	CA89038	ATTACHMENT KIT CA89037 TO CA89003	1
HONEYWELL	CA89038	KIT HD MULTI CAB	1
HONEYWELL	CA89402	MEGABUSS EXPANSION CHASSIS, 9 SLCT	1
HONEYWELL	CA89402	KIT NML WRP TRAY	1
HONEYWELL	CA89402	TRAY EXPANSION 10 CARD	1
HONEYWELL	CA89402	KIT VENTED FRT PNL	1
HONEYWELL	CA89402	POWER SUPPLY M176 60HZ	1
HONEYWELL	CA89402	AC INPUT ASSY	1
HONEYWELL	CDM9101	CART DISK DEVICE PAK	1
HONEYWELL	CDM9101	NML DISK ADAPTER	2
HONEYWELL	CDS9116	CART DISK 60H 120V	1
HONEYWELL	CDS9116	CABLE 8 FT	1
HONEYWELL	CDS9116	KIT DISK INSTALLATION	1
HONEYWELL	CDS9116	CARTRIDGE [illegible] UNIT W-CONTROLLER	1
HONEYWELL	CDS9116	KIT STABIL[illegible] FOOT	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	CMC9009	EXPANDED MEMORY	3
HONEYWELL	CMC9038	EXPANDED MEMORY	3
HONEYWELL	CMC9132	LEVEL 6 MEMORY DAUGHTER BOARTDS - 256KB	1
HONEYWELL	CMC9132	LEVEL 6 MEMORY CONTROLLER AND 512KB	1
HONEYWELL	CMC9654	MEM DTR 256KB	1
HONEYWELL	CMC9654	1MB MEMORY EXPANSION	1
HONEYWELL	CMC9654	MEM EXPANDED	1
HONEYWELL	CMM9006	LEVEL 6 32K PARITY MEMORY	4
HONEYWELL	CPF9519	LEVEL 6 MAX SLOW CIP	1
HONEYWELL	CPF9519	LEVEL 6 MOD-43 IO MOD-47 UPGRADE	1
HONEYWELL	CPK9657	LEVEL 6 MODEL 47 TO 57 UPGRADE CIP MOD 5X FAST	1
HONEYWELL	CPK9657	LEVEL 6 CBL L6 CACHE KIT	1
HONEYWELL	CPK9657	LEVEL 6 MMU 150 4X-5X	1
HONEYWELL	CPK9657	LEVEL 6 CPU 150 5X	1
HONEYWELL	CPK9657	LEVEL 6 C-R CACHE	1
HONEYWELL	CPS9561	LEVEL 6 MODEL 43 CPU 10 SLOT	1
HONEYWELL	CPS9561	LEVEL 6 DRESS PANEL	1
HONEYWELL	CPS9561	LEVEL 6 150 CONTROL PANEL	1
HONEYWELL	CPS9561	LEVEL 6 KIT NML WRP TRAY	1
HONEYWELL	CPS9561	LEVEL 6 10 CARD BASIC CHASSIS	1
HONEYWELL	CPS9561	LEVEL 6 KIT VENTED FRONT PANEL	1
HONEYWELL	CPS9561	LEVEL 6 KIT NML CONTROL PANEL	1
HONEYWELL	CPS9561	LEVEL 6 M170 POWER SUPPLY 60H	1
HONEYWELL	CPS9561	LEVEL 6 4X 150 RALU	1
HONEYWELL	CPS9561	LEVEL 6 M170 POWER SUPPLY 60H	1
HONEYWELL	CPS9561	LEVEL 6 4X 150 CPU	1
HONEYWELL	CPS9561	LEVEL 6 AC INPUT ASSY	1
HONEYWELL	CRM9101	LEVEL 6 CARD READER DEVICE PAC	1
HONEYWELL	CRM9101	LEVEL 6 BDC ADAPTER CARD READER	1
HONEYWELL	CRU9108	LEVEL 6 CARD READER	1
HONEYWELL	CRU9108	LEVEL 6 CABLE NML FOR CARD READER	1
HONEYWELL	DCE9606	LEVEL 6 LIU EXPANSION CHASIS	1
HONEYWELL	DCF9606	LEVEL 6 CHAS ASSY 16 LIU	1
HONEYWELL	DCF9606	LEVEL 6 CA PWR DTST 5V	1
HONEYWELL	DCF9606	LEVEL 6 CBL PWR SUP TO CON	1
HONEYWELL	DCF9606	LEVEL 6 CA PWR EXT 5V	1
HONEYWELL	DCF9606	LEVEL 6 CONN ASSY SHORTING	1
HONEYWELL	DCF9640	LEVEL 6 LIV ADAPTER	1
HONEYWELL	DCF9640	LEVEL 6 LIU RS232C-V.24	1
HONEYWELL	DCF9643	LEVEL 6 RS422 ASYNCHRONOUS LINE INTERFACE UNIT	1
HONEYWELL	DCF9643	LEVEL 6 RS-422 LIV LINE INTERFACE UNIT	1
HONEYWELL	DCF9661	LEVEL 6 AUTODIAL LINE INTERFACE UNIT FOR DCM9641	1
HONEYWELL	DCM9101	LEVEL 6 ASYNCHRONOUS COMMUNICATIONS PAK	1
HONEYWELL	DCM9101	LEVEL 6 CBL BLKHD SYNC-ASY	1
HONEYWELL	DCM9101	LEVEL 6 ASYNCHRONOUS COMMUNICATIONS PAK	1
HONEYWELL	DCM9101	LEVEL 6 MLCC ADAPT-2 LINES ASYNCH EIA	3
HONEYWELL	DCM9101	LEVEL 6 CBL COMM DATA	1
HONEYWELL	DCM9101	LEVEL 6 CBL HNP SYNC + ASYNC 30 FT	1
HONEYWELL	DCM9103	LEVEL 6 SYNCHRONOUS COMMUNICATION PROCESSOR	1
HONEYWELL	DCM9103	LEVEL 6 MLCC ADAPT - 2 LINES SYNCH EIA	1
HONEYWELL	DCM9103	LEVEL 6 CBL HNP SYNCH + ASYNC 30 FEET	1
HONEYWELL	DCM9106	LEVEL 6 CBL DATA SET LA	1
HONEYWELL	DCM9106	LEVEL 6 HDLC COMMUNICATIONS PAC	1
HONEYWELL	DCM9106	LEVEL 6 MLCC ADAPT - HDLC	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	DCM9110	LEVEL 6 AUTO CALL DAUGHTER BOARD	1
HONEYWELL	DCM9110	LEVEL 6 DUAL AUTO CALL ADA	1
HONEYWELL	DCM9110	LEVEL 6 CA BH AUTOCALL	1
HONEYWELL	DCM9137	LEVEL 6 CA CONT-RH INT	1
HONEYWELL	DCM9137	LEVEL 6 RS-422 COMMUNICATIONS FAC	1
HONEYWELL	DCM9137	LEVEL 6 MLCC ADAPT ASYNC	1
HONEYWELL	DCM9137	LEVEL 6 ADAPTER PLATE	2
HONEYWELL	DCM9137	LEVEL 6 MLCC ADAPT ASYNC	1
HONEYWELL	DCM9137	LEVEL 6 TWO PORT RS-422 DAUGHTER BOARD	1
HONEYWELL	DCM9641	LEVEL 6 RS-232 DAUGHTER BOARD - 4 PORT	1
HONEYWELL	DCM9641	LEVEL 6 LIU BACKPLANE KIT	1
HONEYWELL	DCM9641	LEVEL 6 ADAPTER SYNC-ASYNC	1
HONEYWELL	DCM9641	LEVEL 6 4 LINE ASYNCHRONOUS ADAPTER FOR MLC9640	1
HONEYWELL	DCM9641	LEVEL 6 LIU BACKPLANE KIT	1
HONEYWELL	DCM9641	LEVEL 6 4 CHANNEL ASYNCH DAUGHTER BOARD	1
HONEYWELL	DCM9641	LEVEL 6 LIU BACKPLANE KIT	1
HONEYWELL	DCM9641	LEVEL 6 4 LINE ASYN-SYN COMM ADAPTER BOARD	1
HONEYWELL	DCM9641	LEVEL 6 LIU BACKPLANE KIT	1
HONEYWELL	DLU7813	LEVEL 6 DLU 7813 LOGIC BOARD	1
HONEYWELL	DLU7813	LEVEL 6 LOGIC BOARD	3
HONEYWELL	DMK7886	LEVEL 6 KEYBOARD MULTI-FUNCTION 7813-7305	11
HONEYWELL	DMU7300	LEVEL 6 CRU - DISPLAY MONITOR 12 IN	1
HONEYWELL	DMU7300	LEVEL 6 CRT 7300 MONITOR 12 IN GREEN	1
HONEYWELL	DMU7300	LEVEL 6 CRU - DISPLAY MONITOR 12 IN	1
HONEYWELL	DPU7300	LEVEL 6 CRU POWER 60H	2
HONEYWELL	DPU7300	LEVEL 6 CRU POWER SUPPLY	1
HONEYWELL	DPU7300	LEVEL 6 POWER CABLE	1
HONEYWELL	IN202	TERMINAL APRT2	1
HONEYWELL	IN202	TERMINAL FPRT4	1
HONEYWELL	KCM9101	LEVEL 6 KEYBOARD CONSOLE DEVICE PAC	1
HONEYWELL	KCM9101	LEVEL 6 BDC ADAPTER CONSOLE	1
HONEYWELL	M4190	LEVEL 6 256MB REMOVABLE DISK PACK	1
HONEYWELL	MDC9101	LEVEL 6 MULTIPLE DEVICE CONTROLLER	2
HONEYWELL	MLC9103	LEVEL 6 MULTILINE COMMUNICATIONS PROCESSOR	3
HONEYWELL	MLC9103	LEVEL 6 KIT COMM BLKHD	1
HONEYWELL	MLC9103	LEVEL 6 MLCP BASIC	1
HONEYWELL	MLC9640	LEVEL 6 MULTILINE COMMUNICATIONS PROCESSOR	1
HONEYWELL	MLC9640	LEVEL 6 MLC-16 CONT	1
HONEYWELL	MLC9640	LEVEL 6 MULTI-LINE COMM PROCESSOR - 16 PORTS	1
HONEYWELL	MSC9101	LEVEL 6 NML DISK CONT	1
HONEYWELL	MSC9101	LEVEL 6 MASS STORAGE CONTROLLER	1
HONEYWELL	MSS9104	LEVEL 6 256MB MASS STORAGE UNIT W-CONTROLLER	1
HONEYWELL	MSS9104	LEVEL 6 DISK DEVICE 60HZ	1
HONEYWELL	MSS9104	LEVEL 6 CBL RADI	1
HONEYWELL	MSS9104	LEVEL 6 SMD ADAP	1
HONEYWELL	MSS9104	LEVEL 6 CBL DAIS	2
HONEYWELL	MSS9104	LEVEL 6 MSC CNTL	1
HONEYWELL	MSS9104	LEVEL 6 CBL GROUND	1
HONEYWELL	MSS9104	LEVEL 6 MSU ADAP	1
HONEYWELL	MSS9104	LEVEL 6 TERMINAT	1
HONEYWELL	MSU9104	LEVEL 6 256MB MASS STORAGE UNIT W-O CONTROLLER	1
HONEYWELL	MSU9104	LEVEL 6 CBL GROUND	1
HONEYWELL	MSU9104	LEVEL 6 DISK DEVICE 60HZ	1
HONEYWELL	MTC9102	LEVEL 6 MAGNETIC TAPE CONTROLLER AND DEVICE PAC	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	MTC9102	LEVEL 6 CABLE 4 INCHES	1
HONEYWELL	MTC9102	LEVEL 6 PE MAG TAPE	1
HONEYWELL	MTC9102	LEVEL 6 CLOCK-ANALOG	2
HONEYWELL	MTC9102	LEVEL 6 DATA RECOVERY UNIT	1
HONEYWELL	MTC9102	LEVEL 6 CLOCK-ANALOG	1
HONEYWELL	MTC9102	LEVEL 6 ADAPTER	1
HONEYWELL	MTU9109	LEVEL 6 MAGNETIC TAPE DEVICE 9TRACK 45IPS	1
HONEYWELL	MTU9109	LEVEL 6 TAPE DRIVE 60H 120V	1
HONEYWELL	MTU9109	LEVEL 6 MAGNETIC TAPE DEVICE 9TRACK 45IPS	1
HONEYWELL	MTU9109	LEVEL 6 TAPE DRIVE 60H 120V	1
HONEYWELL	MTU9109	LEVEL 6 READ TERMINATOR	1
HONEYWELL	MTU9109	LEVEL 6 KIT TAPE DR EXP CA.	1
HONEYWELL	MTU9109	LEVEL 6 CBL DEVICE TO DEVICE	1
HONEYWELL	MTU9109	LEVEL 6 CNTRL CABLE TO DEVICE	1
HONEYWELL	MTU9109	LEVEL 6 WRITE TERMINATOR	1
HONEYWELL	PRF9102	LEVEL 6 VERT FORMAT UNIT FOR 990 LPM PRINTER	1
HONEYWELL	PRF9102	LEVEL 6 TAPE PUNCH	1
HONEYWELL	PRF9102	LEVEL 6 12 CHANNEL VERT FORMAT TAPE	1
HONEYWELL	PRM9101	LEVEL 6 DEVICE PAC FOR PRINTER	2
HONEYWELL	PRM9101	LEVEL 6 BDC ADAPTER PRINTER	1
HONEYWELL	PRM9101	LEVEL 6 MDC ADAPT PRINTER	1
HONEYWELL	PRM9101	LEVEL 6 PRU9104 CABLE KIT	1
HONEYWELL	PRU7170	LEVEL 6 PRINTER 150 CPS RS-422 DIRECT CONNECT	4
HONEYWELL	PRU7170	LEVEL 6 PRINTER NML ASPI 32 PTR	3
HONEYWELL	PRU7270	LEVEL 6 PRINTER 400 CPS NML ASPI 38	1
HONEYWELL	PRU9104	LEVEL 6 LINE PRINTER 300 LPM	1
HONEYWELL	PRU9109	LEVEL 6 LINE PRINTER 990 LPM	1
HONEYWELL	PRU9109	LEVEL 6 PRINTER 301 WITH 120 VOLTS	1
HONEYWELL	PRU9109	LEVEL 6 CABLE KIT	1
HONEYWELL	PSS9004	LEVEL 6 CBL AC CORD 60H	1
HONEYWELL	PSS9004	LEVEL 6 POWER DIST UNIT 60H	1
HONEYWELL	PSS9004	LEVEL 6 CA PWH AC CORD	1
HONEYWELL	PSS9004	LEVEL 6 POWER DISTRIBUTION UNIT	2
HONEYWELL	TTY	TERMINAL TTY01	1
HONEYWELL	TWU9104	LEVEL 6 CONSOLE TYPEWRITER	1
HONEYWELL	TWU9104	LEVEL 6 CBL CONSOLE	1
HONEYWELL	VBK7305	LEVEL 6 VIP UPGRADE KIT 7301 TO 7305	1
HONEYWELL	VIP7205	LEVEL 6 CRT DISPLAY TERMINAL	1
HONEYWELL	VIP7301	LEVEL 6 KEYBOARD 7300 STANDARD USA	5
HONEYWELL	VIP7301	LEVEL 6 CRT-DISPLAY TERMINAL	1
HONEYWELL	VIP7301	LEVEL 6 PWA ASSY UNIT RS-422	5
HONEYWELL	VIP7301	LEVEL 6 POWER SUPPLY MODEL 60HZ	1
HONEYWELL	VIP7301	LEVEL 6 POWER SUPPLY MODEL 60HZ	1
HONEYWELL	VIP7301	LEVEL 6 TERMINALS	2
HONEYWELL	VIP7301	LEVEL 6 TERMINAL 60HZ 12 INCH GREEN	5
HONEYWELL	VIP7301	LEVEL 6 KIT SCREWDRIVER	1
HONEYWELL	VIP7301	LEVEL 6 CABLE ASSY POWER 60HZ	1
HONEYWELL	VIP7301	LEVEL 6 CABLE 25 FT CROSSOVER	1
HONEYWELL	VIP7813	LEVEL 6 CRT DISPLAY TERMINALS	1
HONEYWELL	VIP7813	LEVEL 6 KYHD MF 7813-7305	1
HONEYWELL	VIP7813	LEVEL 6 VIP 7813 TERMINAL - LOGIC UNIT	2
HONEYWELL	VIP7813	LEVEL 6 MF KEYB	1
HONEYWELL	VIP7813	LEVEL 6 KYHD MF 7813-7305	3
HONEYWELL	VIP7813	LEVEL 6 POWER SUPPLY	1

OFFICE: Alaska State Office - Partial Inventory as of 3/86 (Data General not included)

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
HONEYWELL	VIP7813	LEVEL 6 PWR SUP MDI 60HZ	4
HONEYWELL	VIP7813	LEVEL 6 MONITOR 7300 12 IN GREEN	1
HONEYWELL	VIP7813	LEVEL 6 PWA CRU 7813 422-2	4
HONEYWELL	VIP7813	LEVEL 6 TERM 60HZ 12IN GREEN	4
HONEYWELL	VIP7813	LEVEL 6 T2001 OVERLAY	1
HONEYWELL	VIP7813	LEVEL 6 KIT SCREWDRIVER	1
HONEYWELL	VIP7813	LEVEL 6 CABLE W16 25 FOOT	1
HONEYWELL	VIP7813	LEVEL 6 VIP 7813 TERMINAL	5
HONEYWELL	VIP7813	LEVEL 6 KYBD MF 7813-7305	1
HONEYWELL	VIP7813	LEVEL 6 KEYBOARD MULTI-FUNCTION	5
HONEYWELL	VIP7813	LEVEL 6 LOGIC BOARD	5
HONEYWELL	VIP7813	LEVEL 6 POWER SUPPLY	6
HONEYWELL	VIP7813	LEVEL 6 MONITOR 7300 12 IN GREEN	1
HONEYWELL	VIP7813	LEVEL 6 POWER CABLE FOR 7813	1
HONEYWELL	VIP7813	LEVEL 6 DATA CABLE FOR RS-422	1
HONEYWELL	XC04859	PRINTER - 0686	1
HONEYWELL	XC11396	PRINTER 0851	1
HONEYWELL	XC13239	MODEMS	1
HONEYWELL	XC13239	PRINTER - 0788	1
HONEYWELL	XCC11396	PRINTER 0795	1
TEXAS INSTRUMENTS	TI810	TERMINAL BARCD	1

ARIZONA DETAILED INVENTORY

OFFICE: Arizona State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Apple	MacIntosh	Microcomputer	2
Alanthus	LA-120	Printer/Terminal	16
C. ITOH	1500	Printer	20
Codex	6005	Multiplexor	16
Codex	6000	Network Processor	1
Data General	C150	Minicomputer	1
Digilog	MSC-1200	Network Supv. System	1
Equinox	0036	Device	0
Equinox	0037	Device	0
Equinox	0033	Port-Contention	1
Halcyon	T9600	Modem	2
Honeywell	B300-101	300 LPM Band Printer	1
Honeywell	*	900 LPM Printer	1
Honeywell	SHL928	Assembler	1
Honeywell	SHL930	Basic	1
Honeywell	CR-500	Card Reader	1
Honeywell	SHL933	Co Compiler	1
Honeywell	SHL927	For Compiler	1
Honeywell	SHC922	GCOS 2780/3780	1
Honeywell	SHC909	GCOS BSC Transport	1
Honeywell	SHC949	GCOS Data Entry	1
Honeywell	SND908	GCOS Info	1
Honeywell	AHP040	GCOS OASF	1
Honeywell	SHF909	GCOS Sort/Merge	1
Honeywell	STS990	GCOS Transaction Processor	1
Honeywell	003	Mass Storage Units	4
Honeywell	L6	Minicomputer	2
Honeywell	SHL915	MOD400	2
Honeywell	7075	Printer	33
Honeywell	SHL964	Remote Network	1
Honeywell	*	Tape Drives 10,000	4
Honeywell	7813	Terminal	60
KayPro	*	Microcomputer	2
Lear Seigler	ADM3	Terminal	-
Lear Seigler	ADM24	Terminal	-
Megatek	5000	Graphic System	3
Nicholet/Zeta	C63	Controller	1
Nicholet/Zeta	3610	Plotter	1
Omron-Ramtek	8025	Terminal	1
Paradyne	T96	Modem	16
Philips	P3100	Microcomputer	20
Talso	*	Dig. Tablet	1
Tektronix	4954	Dig. Tablet	1
Tektronix	4907	File Manager	1
Tektronix	4054	Graphic Term	1
Tektronix	4611	Printer	1
Ven-Tel	212T	Modem	32
Wang	PC	Microcomputer	8

BIFC DETAILED INVENTORY

As of 3/86

OFFICE: BIFC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
3M	EMT9165	Telecopier	2
Applied Digital Data System	*	Terminal ($1440.00 each)	5
Amdek	Color II	Monitor	1
Anadex	DP800	Floppy Disk Drives	2
Anadex	-	Printer	1
Anadex	*	Video Monitors	2
Apple	IIE	Microcomputer ($2200 each)	3
Apple	1200	Modem	1
C.Itoh	F-1055	Printer	4
CalComp	9000	Digitizer Tablet	1
Cermetek	1200	Modem	1
Cermetek	212A	Modem	2
CPT	8525	Word Processor	2
Data General	6241	6500 Color Display	1
Data General	6160	73 MB Disk and Cabinet	1
Data General	3905-78H	AOS/VS Basic Language	1
Data General	3901-75H	AOS/VS Fortran 77 Language	1
Data General	3901-70N	AOS/VS Fortran 77 STR Service	2
Data General	3913-10N	AOS/VS Infos II Querry Software	1
Data General	3900-75H	AOS/VS Operating for MV40000s	3
Data General	30051-76H	AOS/VS PASCAL Language	1
Data General	3915-10N	AOS/VS Sort/Merge Software	1
Data General	*	Asynchronous Controller IAC/16	12
Data General	4327A	Band Printer	1
Data General	6130	D400 CRT Terminal	2
Data General	6131	D400 Keyboard	2
Data General	EB762	Expansion Chassis	2
Data General	30220-01H	GCI for 6500 Graphic Terminal AOS/VS	1
Data General	8706	I/O Bus Repeater Board	2
Data General	3910-75H	Infos II System	1
Data General	5899KCA	MCS Cables	6
Data General	S/20	Minicomputer	1
Data General	MV10000	Minicomputer	1
Data General	6237	2062 MB Disk Storage System	1
Data General	4307H	Tape Drive	1
Data General	619M	Teleprinter	1
Data General	MV4000	Minicomputer	2
Data General	6160	73MB Disk Storage	2
Data General	4372CD	Mounts	2
Data General	8766	Power Booster Board	2
Data General	5899HR	Radial MCS Chassis	1
Data General	5899J	Radial MCS Interface Boards	3
Data General	5899I	Radial MCS Repeater Boards	3
Data General	3915-20H	Sort/Merge Repro Copy	1
Data General	6026	Tape Drive with Cabinet and Cables	2

OFFICE: BIFC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Data General	619MA	TP2 Teleprinter	2
Digital	DecWtr II	Terminal/Printer	3
Dynatech	*	Peripheral Switch Matrix for 128 Channels	2
Dynatech/Scipar	*	Watchdog Microprocessor Unit for Dynatech above	2
Epson	MX100	Printer	1
Epson	MX80	Printer	3
Epson	LQ1500	Printer	1
Epson	FX-80	Printer ($65.00 each)	2
Hayes	1200	Modem ($400 each)	2
Hayes	1200	Modem ($500.each)	7
HEI	Model 3	Card Reader	1
HEI	Model 3	Operator Console	1
Hewlett Packard	9845	Microcomputer	1
Hewlett Packard	9836	Microcomputer - Includes: Printer and 2 disk drives	1
Honeywell	TWU9104	Console Typewriter	1
Honeywell	CDU9116	Disk Drive ($8400 each)	2
Honeywell	PRN9104	Line Printer ($10,400)	2
Honeywell	MSS9104	Mass Storage Unit	1
Honeywell	Level 6	Minicomputer	1
Honeywell	PRU7170	Serial Printer	3
Honeywell	PRU7070	Serial Printer	1
Honeywell	MTU9109	Tape Drive	1
Honeywell	VIP7201	Terminal	1
Honeywell	VIP7305	Terminal ($1950 each)	3
Honeywell	VIP7205	Terminal ($2250 each)	5
Kinemetrics	60 DC	Time Standard	1
Microcom	SX/1200	Modem	1
N/A	N/A	Dedicated Circuit	45
N/A	Voice-grade	Telecomm. Lines ($33.80/$35.40)	24
Nicolet-zeta	Z-8	Plotter	1
Northstar	Advantage 2Q	Microcomputer ($2339.00 each)	32
Northstar	Horizon	Microcomputer (10 MB)	1
Northstar	Advantage	Microcomputer, HD 15, ($5068.00 each)	4
Northstar	Advantage	Microcomputer, HD 30	1
Northstar	SOROC	Terminals	2
Osborne	Executive	Microcomputer ($1000.00 each)	3
Qume	Rotary VII	Printer	1
Racal-Milgo	1200 Mark II	Modem	55
Racal-Milgo	Omnimode 48	Modem	21
Racal-Milgo	Omnimode 96	Modem	11
Racal-Milgo	24LSI	Modem	2
Racal-Milgo	1200 Mark I	Modem	1
Racal-Milgo	Omnimux 160	Multiplexor	2
Racal-Milgo	Omnimux 80	Multiplexor ($57 each)	9
Racal-Milgo	CMS-185	Network Diagnostic Controller	1

OFFICE: BIFC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Racal-Milgo	82A 5232	Printer (Leased)	1
Racal-Vadic	VA212LC	Modem	1
Radio Shack	TRS-80	Microcomputer	2
Ramtek	8130	Terminal - CRT	1
RIGS	*	Consists of a desktop microcomputer, display terminal and printer as follows: IAMS RIGS Remote Interactive Graphics System	25
RIGS/Anadex	DP9501	Printer ($1,616.00)	1
RIGS/Data General	8735NT	256 Kbyte memory expansion ($1,056.00)	1
RIGS/Data General	44632T	4 line asynchronous multiplexer ($925.00)	1
RIGS/Data General	*	AOS Operating System ($400.00)	1
RIGS/Data General	30577-80T	Basic Language ($300.00)	1
RIGS/Data General	20	Desktop Microcomputer ($6,979.00) Includes: 512KB memory, 368KB Floppy Disk Drive, 15MB Winchester Disk Drive	1
RIGS/Data General	30582-80T	Pascal Language ($800.00)	1
RIGS/Visual	500	Graphics Display ($2,424.00)	1
Scipar	*	Customized Appl. Software	2
Synergetics Intl.	1006B	GOES DCP Demodulator	5
Synergetics Intl.	1004B	GOES Receiver	1
Teletype	43	Printer	1
Texas Instruments	810	Printer	1
Texas Instruments	810 RO	Printer	1
Texas Instruments	765	Terminal	2
Texas Instruments	820KSR	Terminal - Hard Copy	1
Topaz	Model 2	Power Conditioner	1
Topaz	Source II	Standby Power System	1
Toshiba	WTZ2060R999	Printer	1
Ven-Tel	2100-31	Modem	1
Ven-Tel	MD212-3E	Modem	1
Ven-Tel	*	Modem	1
Ven-Tel	212+	Modem	1
Versalite ADDS	S4-1000	Microcomputer	1
Wang	DW/OS-55	Printer - Lease	1
Wang	6581WC-1	Printer-lease	1
Wang	OIS-50	Word Processor - Lease	1
Wang	OIS-40	Word Processor - Lease	1

CALIFORNIA DETAILED INVENTORY

OFFICE: California State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
ALTEK	*	Digitizing Tablet	1
Burroughs	PC	Microcomputers	4
Data General	6053	Display Terminal	6
Data General	C-330	Mass Storage Unit	2
Data General	C-330	Master Station Printer Terminal	6
Data General	C-330	Minicomputer	1
Data General	C-330	Printer	1
Data General	C-330	Tape Drive	2
Data Point	5500	Mass Storage Unit	4
Data Point	5500	Master Station Display Terminal	1
Data Point	5500	Minicomputer	1
Data Point	5500	Printer	1
Data Point	5500	Tape Drive	1
DEC	DS-120	Hard copy terminal	2
DEC	LA-1220	Hard copy terminal	7
DEC	T-300	Hard copy terminal	1
Diablo	630	R/O Printer	1
Honeywell	Level 6	Card Reader	1
Honeywell	VIP 7813	Display Terminal	6
Honeywell	VIP 7200	Display Terminal	1
Honeywell	VIP 7801	Display Terminal	5
Honeywell	VIP 7200	Display Terminal	3
Honeywell	Level 6	Mass Storage Unit	4
Honeywell	Level 6	Master Station Printer Terminal	1
Honeywell	Level 6	Minicomputer	1
Honeywell	Level 6	Printer	2
Honeywell	Level 6	Tape Drive	2
IBM	PC/XT	Microcomputers	3
IBM	PC/XT	Microcomputers Printers	6
Interec Data Systems	Superbrain QD	Microcomputer	2
Intertec Data Systems	Superbrain QDII	Microcomputer	2
Intertec Data Systems	Suberbrain QDII	Microcomputers Printers	1
Lear Siegler	ADM-5	Display Terminal	1
Mannesmann Tally	MT180	Display Terminal Printer	9
Omron/Ramtek	8025AG	Display Terminal	12
Phillips	P3100	Microcomputer	15
Talos	6608	Digitizing Tablet	1
Tandberg Data	TDV 2200 S	Display Terminal	5
Tandberg Data	TDV 2200 S	Display Terminal Printer	4
Tektronix	4054	Digitizing Station	1
Tektronix	4014	Graphics terminal	2
Tektronix	4054	Hard Copy Unit	3
Tektronix	4054	Mass Storage Unit	2
Tektronix	4054	Microcomputer	4
Tektronix	4054	Plotter	1

OFFICE: California State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
TelVideo Inc.	950	Display Terminal	3
TelVideo Inc.	930	Display Terminal	1
Texas Instruments	*	Hard copy terminal	1
Texas Instruments	787	Portable Terminal	4
Wang	PC	Microcomputer	27
Wang	PC	Microcomputers Printers	13

COLORADO DETAILED INVENTORY

As of 3/86

OFFICE: Colorado State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
3CI	*	Data General/Infocen Level-2 Class III	0
Alanthus Data	T1220	General/Printer Terminal	22
Alanthus Data	T1220	Honeywell L-6/Printer Terminal	1
Altek	ACT462	Data General MV8000/Digitizing Tablet	1
AT&T	DC 6300	Personal Computer	1
Calcomp	8482	Data General MV8000/Digitizing Tablet	2
Calcomp	1073	Data General MV8000/Plotter	1
Codex	LSI4800M	General/Modem	1
Codex	CONV7030	General/Multiplexor	4
Comp. Transceiver System	Execuport 3000	General/Portable Terminal	5
Concord Data	224	General/Modem	2
Data General	9350	Data General MV8000/CPU	1
Data General	D200	Data General MV8000/CRT	4
Data General	6061	Data General MV8000/Disc Drive	2
Data General	6236	Data General MV8000/Disc Drive	1
Data General	4216	Data General MV8000/Line Printer	1
Data General	6194	Data General MV8000/Printer Terminal	1
Data General	6026-AS	Data General MV8000/Tape Drive	2
Data General	3902-35H	Data General/AOS Fortran 5 (under AOS/VS) sources	-
Data General	30	Personal Computer	1
Data General	3902-00H	Data General/AOS Fortran 5 (under AOS/VS)	-
Data General	3928-00H	Data General/AOS Idea (Under AOS/VS)	-
Data General	3910-00H	Data General/AOS Infos II	-
Data General	3924-02H	Data General/AOS RJE80 (under AOS/VS)	-
Data General	3915-01H	Data General/AOS Sort/Merge (under AOS/VS)	-
Data South	DS180	General/Printer	2
Florida Data	DIS130	General/Printer	1
Florida Data	DSP130	General/Printer	1
Gandalf Data	MiniPACXIV	General	1
Gandalf Data	LDS125	General/Modem	8
Hewlett Packard	26211	General/CRT	1
Honeywell	VIP7205	General/CRT	6
Honeywell	VIP7301	General/CRT	12
Honeywell	6-47	Honeywell L-6/CPU	1
Honeywell	VIP7801	Honeywell L-6/CRT	7
Honeywell	MSS9100	Honeywell L-6/Disc Drive	1
Honeywell	CDS9116	Honeywell L-6/Disc Drive	1
Honeywell	MSU9104	Honeywell L-6/Disc Drive	1
Honeywell	PRU9104	Honeywell L-6/Line Printer	1
Honeywell	PRU9109	Honeywell L-6/Line Printer	1

OFFICE: Colorado State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	TWU9104	Honeywell L-6/Printer Terminal	1
Honeywell	MTU9109	Honeywell L-6/Tape Drive	2
Honeywell	SHL-1412	Honeywell Level 6/Advanced Assembler	-
Honeywell	SHL-1332	Honeywell Level 6/Advanced COBOL	-
Honeywell	SHL-1272	Honeywell Level 6/Advanced Fortran	-
Honeywell	SCH-1492	Honeywell Level 6/Data Entry Facility	-
Honeywell	SHS-1412	Honeywell Level 6/GCOS-6, MOD 400	-
Honeywell	SHP-1132	Honeywell Level 6/Production Facility	-
Honeywell	SCH-2602	Honeywell Level 6/RNP-6	-
Honeywell	SHF-1092	Honeywell Level 6/Sort/Merge	-
IBM	129	General/Card Punch	1
IBM	PC-XT	Personal Computer	1
Infotron Systems	XN790	General/Multiplexor	1
Infotron Systems	SM680	General/Multiplexor	4
Interteck	Hard Disk Drive	General/Disk Drive	2
Interteck	Superbrain	General/Microcomputer	2
Jacobson	A242A	General/Acoustic Coupler	6
Lear Siegler	ADM-3A	Data General MV8000/CRT	1
Lear Siegler	ADM3A+	Data General MV8000/Graphics Terminal	1
Mannesmann Tally	MT180	Honeywell L-6/Printer	3
Microbec	Beehive	General/CRT	1
Multi Tech	CC208	General/Modem Rack W/ Modems	2
Nicolet Zeta	3653SX	Data General MV8000/Plotter	1
Northern Telecom.	MDL78	General/Remote Job Entry Terminal	1
Northern Telecom.	MDL200	General/Tape Drive	1
Penril	300-12	General/Modem	2
Public Domain	*	Data General/Analytical Mapping System (AMS)	-
Public Domain	*	Data General/Automated Digitizing System (ADS)	-
Public Domain	*	Data General/Cartographic Output System (COSS)	-
Philips	PC	Personel Computer	15
Public Domain	*	Data General/Map Overlay and Statistical System (MOSS)	-
Radio Shack	26-1171	General/Acoustic Coupler	1
Ramtek Corp	8130	General/CRT	14
Sanyo	*	Personal Computer	4
TAC	SM-2A	General/Multiplexor	4
Tanberg	TDV2200S	Honeywell L-6/CRT	5
Techtran Industries	9512	General/Micro Disc	2
Tektronix	4954	Data General MV8000/Digitizing Tablet	1
Tektronix	4014-1	Data General MV8000/Grahics Terminal	3

OFFICE: Colorado State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Tektronix	4054	Data General MV8000/Graphics Terminal	3
Tektronix	4014	Data General MV8000/Graphics Terminal	1
Tektronix	4016-1	Data General MV8000/Graphics Terminal	2
Tektronix	4051	Data General MV8000/Graphics Terminal	1
Tektronix	4631	Data General MV8000/Hard Copy	7
Tektronix	4611	Data General MV8000/Hard Copy	2
Tektronix	4907	General/File Manager	3
Televideo	950	General/CRT	3
Televideo	TVI912	General/CRT	1
Texas Instruments	733ASP	General/Portable Terminal	1
Texas Instruments	765	General/Portable Terminal	1
Texas Instruments	TI810	General/Printer	7
Texas Instruments	TI810	General/Printer	19
Ven-Tel Inc.	EC1200-31	General/Modem	5
Ven-Tel Inc.	MD212-3	General/Modem	34
Visual Technology	V500	Data General MV8000/CRT	2

DSC DETAILED INVENTORY

BLM Library
D-553A, Building 50
Denver Federal Center
P. O. Box 25047
Denver, CO 80225-0047

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Alanthus	T300	Printer Term	3
Alanthus Dec Writer	Digital	Printer (246097)	1
Alanthus Dec Writer	Digital	Printer KSR Terminal (235059)	1
Alanthus Dec Writer	Digital	Printer KSR Terminal (235051)	1
Anadex	*	Printer	1
Anadex	DP9625D	Printer-dot matrix (263841)	1
Anadex	DP9501B	Line Printer	5
Anderson-Jacobson	AJ-1259	Modem	1
Anderson-Jacobson	AJ-1256	Modem	1
Anderson-Jacobson	A-242A	Modem	4
Applicon	AP5500	Color Plotter	1
ATT Lease Lines	3002	Lease Lines	16
Bendix	B1	Control Correlator	1
Calcomp	953	Controller	1
Calcomp	925	Controller	1
Calcomp	8000	Digitizing Tablet	1
Calcomp	9000	Digitizing Tablet	1
Calcomp	1051	Plotter	1
Calcomp	1036	Plotter	1
Calcomp 6000	SBL648B	Digitizing System	1
Calcomp, Inc.	660B	Digitizing Tablet	1
Codex	IMS 7800	Data PBX	1
Codex	LSI 24/24	Modems	4
Codex	LSI 4800	Modems	2
Codex	LSI 9600	Modems	2
Codex	6040	Multiplexers	8
Codex	6001	Multiplexers	2
Codex	6030	Multiplexers	5
Compaq Computer Corp.	Compaq	Microcomputer	7
Execuport	*	Printer Term	20
Computer Devices	1205	Port. Terminal w/Modem Printer	1
Comtal/3M	0108	Image Display Workstation	1
Data 100	8711	CRT	1
Data 100	8202	Tape Drive	2
Data General	Software	AOS	1
Data General	3709-51H	Business Basic Programs (Software)	1
Data General	2302-A	CCIS (Software)	1
Data General	D200/100	CRT	1
Data General	6051	CRT Terminal	1

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Data General	6053	CRT Terminal	6
Data General	9930-A	CS/200 Microcomputer	1
Data General	E6169-NA	Dasher D211 CRT	1
Data General	DG-20	Desktop CPU	9
Data General	4356-A	DG High Speed Matrix Line Printer	1
Data General	6061	Disk Drive	1
Data General	6061-A	Disk Drive	3
Data General	Software	FORTRAN 5, FORTRAN 77	1
Data General	6040	Hard Copy Terminal	1
Data General	4216	High Speed Line Printer	1
Data General	3359-76H	Mapped RDOS (Software)	1
Data General	Eclipse C-330	Minicomputer, 512 kb Memory	1
Data General	1123A	Removable Disk Packs	20
Data General	6021/6023	Tape Drive 800 bpi	1
Data General	6026-S	Tape Drive 800/1600 bpi	1
Data South	DS 180	Printer	4
Data Tech	GIP/CRT	Graphics Processor	1
DEC	VT100	Graphics Display	1
DEC	Rainbow 100+	Microcomputer	1
DEC VAX II	*	5 MB Memory	0
DEC VAX II	*	71 MB Hard Disk	2
DEC VAX II	*	1/2" Tape Cartridge	1
DEC VAX II	*	5 1/4" Floppy	2
DEC VAX II	VT220	Terminal	1
DEC VAX II	VT240	Terminal	1
DEC VAX II	LN03	Laser Printer	1
DEC VAX II	Letterwriter 100	Printer/Terminal	1
DEC VAX II	ULTRIX	UNIX OS	1
DEC VAX II	UNIFY	RDBMS	1
DecWriter	III	Printer	1
Decwriter	LA36	Printer Term	1
DecWriter	LA120	Printer Term	13
DecWriter III	*	Hardcopy	1
Diablo	Printer	620	1
Diablo	31	Disk Drives	2
Digital	DecWriter III	Computer Terminal	2
Digital	LA-120-BA	Hard Copy Terminal	1
Digital	DecWriter III	Terminal	2
Digital Equipment Corp.	DecWriter II	Terminal	3

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Digital LA120	LAS12-BC	Printer	1
Digitech	PACER	Test Equipment	1
Digitech	ENCORE 100	Test Equipment	1
Dunn Instruments	631	Dunn Color Camera	1
Enter Computer Inc.	Graphics Printer	SP-100	1
EPICOM	200	Test Equipment	1
ESL, Inc.	P821-D	Scientific Array Processor	1
Execuport	3000	Hardcopy	1
Execuport	300	Hardcopy	1
Florida DATA	OSP 130	Printer	1
General Elec.	1232	Printer	1
Hayes	1200	Modem	1
Hewlett Packard	9111A	Digitizer	1
Hewlett Packard	9816	Microcomputer	1
Hewlett Packard	7470A	Plotter	1
Hewlett Packard	82901B	Printer	1
Hewlett Packard Co.	7925A	120 MB Disk	6
Hewlett Packard Co.	7905A	15 MB Disk	1
Hewlett Packard Co.	2613A	300 LPM Printer	1
Hewlett Packard Co.	7585A	Drafting Plotter	1
Hewlett Packard Co.	7970B	Mag Tape Drive	1
Hewlett Packard Co.	3000 Series III	Minicomputer	1
Hewlett Packard Co.	2645A	Terminal	2
Hewlett Packard 9000/320	*	4MB Memory	0
Hewlett Packard 9000/320	7914	132MB Hard Disk	2
Hewlett Packard 9000/320	7914	1/4" Tape Cartridge	1
Hewlett Packard 9000/320	7970E	1/2" Tape Drive	1
Hewlett Packard 9000/320	9125	5 1/4" Floppy	1
Hewlett Packard 9000/320	9122	3 1/2" Floppy	2
Hewlett Packard 9000/320	35741A	Graphics Terminal	1
Hewlett Packard 9000/320	2392A	Terminal	4
Hewlett Packard 9000/320	Laser Jet	Laser Printer	1
Hewlett Packard 9000/320	Hitachi HDG3648	Digitizer	1
Hewlett Packard 9000/320	HP9000/310	Graphics Workstation	1
Hewlett Packard 9000/320	HP-UX	OS (UNIX)	1
Hewlett Packard 9000/320	UNIFY, ORACLE	RDBMS	1
Hewlett Packard 9000/320	LIS; DIGICALC	GIS	1
Honeywell	Console	*	1
Honeywell	CPZ300	Card Punch	1

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	CPZ301	Card Reader	1
Honeywell	CR-500	Card Reader	1
Honeywell		Central Memory	2
Honeywell	VIP	Consoles	2
Honeywell	DPS 8/70	CPU	2
Honeywell	VIP 7811	CRT	7
Honeywell	7800 T2001B	CRT	1
Honeywell	VIP 7813	CRT	9
Honeywell	VIP 7205	CRT	8
Honeywell	MSS 9104	Disk Drives	3
Honeywell	MSU451	Disk Drives	44
Honeywell	MSU501	Disk Drives	5
Honeywell	*	FNP Console	4
Honeywell	6678	Front End Proc.	1
Honeywell	6661	Front End Proc.	3
Honeywell		IOM	2
Honeywell	MTP601	Mag Tape Controller	1
Honeywell	MSP450	Mass Storage Proc.	4
Honeywell	Level 6/57	Mini Computer	1
Honeywell	URC	Peripheral Cont.	1
Honeywell	3810	Printer	1
Honeywell	G00607	Printer	1
Honeywell	PRU 706X	Printer	1
Honeywell	PR-71	Printers	2
Honeywell	PRU 9109	Printers	2
Honeywell	MTU503	Tape Drives	8
IBM	PC/XT	Microcomputer	1
IBM	PC-M3000	Microcomputer	1
IBM	PC	Microcomputer	1
International Imaging System	70	Image Display Workstation	1
K&E	RSS400	Digitizing Console	1
Kaypro	Micro	KAYPRO II	1
Kaypro	K-2-X	Microcomp. w/Printer, Modem, and Software	1
Kennedy	9800	Tape Drive	1
KYBE	*	Tape Cleaner	2
KYBE	*	Tape Evaluator	1
Leading Edge	F10-55	Printer	1
Lear Siegler	ADM-3	CRT Terminal	6
Lear Siegler	ADM 3	Terminal (246369)	1

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Lear Siegler	ADM 3	Terminal (215226)	1
Liebert	*	Power Distr. Center	1
Mannesmann Tally	MT180	Printer	1
MICOM	M474	Local Multiplexers	4
Modcomp	II/25	CPU	1
Moore	1600	Decollator	1
Nicolet (Zeta)	3653-SX	Drum Plotter	1
Northern Telecom	Series 70	Card Punch	1
Northern Telecom	600	Printer	1
Northern Telecom	73/78	RJE Units	1
Northern Telecom (Data 100)	Series 70	Tape Drive	1
OCLC	100	CRT	1
OCLC	105	CRT	1
Omnimux	40	Multiplexor	1
Omron	8035 G-24	CRT	1
Omron	8025AG	Terminal	34
Omron (Ramtek)	7770	Printer/Terminal (246417)	1
Osborne	Osborne 1	Minicomputer (257747)	1
Racal/Vadic	VA 3451	Modems	2
Ramtek	*	Terminal	1
Ramtek	8025	CRT	5
Ramtek	ADM-3	CRT	1
Ramtek	8025AAG	Omron CRT	1
Ramtek	8130	Terminal	1
Rixon	200	Modem	1
Soroc Tech Inc.	IQ 120	CRT	1
Spectral Data Corp.	RIPS	CPU	1
Sperry-Univac key to disk	CMC 1800	CPU	1
Sperry-Univac	CMC 1225	Disk Drive	2
Sperry-Univac	CMC 108	Keystation	25
Sperry-Univac	237530-001	Printer	1
Sperry-Univac	TP13160	Tape Drive	1
Star Micronics, Inc.	Gemini-10X	Printer	4
Suma Graphic	AC75D-BCD	Digitizing Table	1
Tally	MT 180	Printer	1
Tandberg	TDV 2220S	CRT	1
Tandberg	TDU 2200S	CRT	1
Tektronix	4014	CRT	1
Tektronix	4707	File Manager	1

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Tektronix	4106	Graphics Display	1
Tektronix	4631	Hardcopy	5
Tektronix	46635	Plotter	1
Tektronix	4052	Terminal	1
Tektronix	832	Test Equipment	1
Tektronix	4017	Color CRT Terminal	1
Tektronix	4954	Digitizer Tablet	1
Tektronix	4014	Graphics Terminal	3
Tektronix	4025	Graphics Terminal	1
Tektronix	4014-1	Terminals	1
Teletype	43	Terminal Software: Copy Utility, GRTS, 1004, 2780, 200 UT, Data Conversion for Plotters	1
Televideo	950	CRT	4
Televideo	920	CRT	3
Televideo	912B	Terminal	2
Telex Computer Products	6250/66	Mag Tape Drive	2
Texas Instruments	T1733	Printer Term	1
Texas Instruments	T1820	Printer Term	1
Texas Instruments	T1810	Printer Term	8
Texas Instruments	700 ASR	Data Terminal	2
Texas Instruments	745	Portable Terminal	1
Texas Instruments	810	Printer	1
Texas Instruments	Omni 80	Printer	1
Texas Instruments	Omni 800	Printer	1
Texas Instruments	810	Printer/Terminal	1
Texas Instruments	Omni 800	Remote Terminal	1
Texas Instruments	Silent 700	Terminal (196588)	1
Texas Instruments	Silent 700	Terminal (196591)	1
Texas Instruments	Silent 70	Printer/Terminal (266968)	1
Topaz	70306	Line Regulator	1
Topaz	*	Power Distr. Center	2
Transceiver Systems	3000	(246355)	0
Transceiver Systems Inc.	3810	*	0
Transceiver Systems Inc.	3250	*	0
Trendata	4000	Terminal	1
U.S. Robotics Inc.	-	Modem	1
UARCO	2080	Burster	1
Versatec, Inc.	8222A	Electronic Plotter	1

OFFICE: DSC - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Victor	9000	Microcomputer	1
Visual 500	500	CRT/Graphics Terminal	8
Wang	2270-2	2-Disk Drive	2
Wang	2244B	Card Reader	1
Wang	6515-2	CPU	1
Wang	2200-VP	CPU	1
Wang	2282	CRT	1
Wang	2282	CRT Graphics Ter	1
Wang	5905	CRT Terminal	1
Wang	6581W	Daisy Wheel Printer	1
Wang	PCS II	Desktop Comp. with Printer	1
Wang	2262XY	Digitizing CPU	1
Wang	2260	Disk Drive	1
Wang	5521W	Dot Matrix Printer	1
Wang	2223	Keyboard	1
Wang	PC-XC3	Microcomputer	1
Wang	PC	Microcomputer	1
Wang	5947-TC	Mini-Archiver	1
Wang	WA 3451	Modem	1
Wang	PM004B	PC (Micro)	2
Wang	2232B	Plot. Table	1
Wang	FGIW	Printer	1
Wang	22-31W-3	Printer	2
Wang	2233	Printer	1
Wang	6581-1	Printer/Daisy	1
Wang	5577	Printer/Dot M	1
Wang	2200-LVP8X	Processor	1
Wang	446-0058	Screen Filter	3
Wang	OIS-115-3	System CPU	1
Wang	5536-4	Terminal	3
Wang	2226	Terminal	1
Wang	PC-XC3	Winchester Disk	1
Wang	5536-4	Workstation	1
Wang	OIS	Workstation	1
Wang	LR50719	Workstation	2
Wang	TC-5536-2	Workstation	1
Xerox	16/8	Microcomputer Printer, Winchester Disk Drive	1

ESO DETAILED INVENTORY

As of 3/86

Office: Eastern States Office - Inventory as of 3/86

Manufacturer Name	Model	Item Description	Number
Alanthus	T-1220	Printer/Terminal	4
Beehive	Micro 8	Microcomputer	2
Burroughs	4KB	CPU 01	2
Computer Dev.	Mini-Terminal	Terminal	1
Data South	DS 180	Printer	1
Epson	FX80	Printer	1
Epson	FX100	Printer	4
Epson	MX100 III	Printer	1
Epson	H108A	Multi-Function Unit	1
Execuport	4000	Printer/Terminal	4
Honeywell	CPX9810	Microcomputer 610	1
Honeywell	MTU9109	Magnetic Tape Unit	1
Honeywell	CDS9116	Magnetic Disc Unit	1
Honeywell	MSS9104	Magentic Disc Unit	1
Honeywell	MS49104	Magnetic Disc Unit	1
Honeywell	DSS-10	Magnetic Disc Unit	1
Honeywell	MSU9104	Magnetic Disc Unit	1
Honeywell	9114A	Magnetic Disc Unit	2
Honeywell	CMC9038	EDAC Memory Storage Unit	1
Honeywell	7205	Terminal	4
Honeywell	VIP-7801	Terminal	4
Honeywell	TWU 9104	Terminal	2
Honeywell	300 LPM	Printer	1
Honeywell	PRU 9104	Printer/Terminal	1
Hewlett-Packard	2621P	Terminal	1
Intertec	Superbrain QD	Microcomputer	3
Itoh Electronic	8510	Printer	1
Kaypro	Robie	Microcomputer	1
Mannesman-Tally	MT-180I	Printer	5
Philips	P-3100 PC	Microprocessor	2
Ramtek	8025	Terminal	4
Sperry Univac	4243	Magnetic Tape Unit	1
Tandberg	TDV22005	Terminal	9
Tektronix	4695	Printer	1
Teleram	3100/2	Microcomputer	1
Teleram	3620	Floppy Disk Drive	1
Televideo	950	Terminal	1
Texas Instruments	810	Terminal	1
Texas Instruments	800	Terminal	1
Texas Instruments	OMNA	Terminal	1

Office: Eastern States Office - Inventory as of 3/86

Manufacturer Name	Model	Item Description	Number
020 - Jackson District Office			
Execuport	4000	Printer/Terminal	1
Televideo	950	Terminal	1
Data South	DS180	Printer	1
030 - Milwaukee District Office			
Execuport	4000	Printer/Terminal	1
Computer Dev.	Miniterm	Terminal	1
Televideo	950	Terminal	1
Data South	DS180	Printer	2

IDAHO DETAILED INVENTORY

As of 3/86

OFFICE: Idaho State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Tektronix	S9602B	Image Handling Un.	1
-	-	Modem	1
Alanthus	TC30061	Acoustic Coupler	2
Anderson/Jacobsen	AJ-460	Input Console	1
Burroughs	L9938200	Acctg. Forms Printer	1
Codex Corp.	6000	(DSC)Multiplexer	1
Codex Corp.	IMS7800	Contention Unit	1
CPS Corp.	PMK2045	PowerMite Pwr. Supply	1
CTS/Execuport	4000	Portable TTY Term/Pr.	1
Da-Pro	55	Switch	1
Da-Pro	110S5	Switch CRT/Printer	2
Da-Pro	55-51-140	Printer Configuration	1
Data General	-	GIS Equipment	1
Dec/Alanthus	T1210	TTY Terminal/Printer	1
Dec/Alanthus	T1220	TTY Terminal/Printer	12
Dest Corp.	202	Optical Scanner	1
Elect.Dev.Inc.	0044	Display Unit (loan I3)	1
Epson	FX100	Dot Matrix Printer	1
Gandalf	120B	Modem	16
Gandalf	122	Modem	11
Gandalf	PS910	Rack Mount Modems	1
GE	1232	Printer	1
Halcyon	801	Mini Fox Data Monitor	1
Honeywell	CRU9108	Card Reader	1
Honeywell	CDU9116	Cartridge Dsk Drive	2
Honeywell	43	Central Processor	1
Honeywell	VIP7800	CRT Terminal	1
Honeywell	VIP7201	CRT Terminal	5
Honeywell	VIP7205	CRT Terminal	3
Honeywell	VIP7801	CRT Terminal	2
Honeywell	VIP7813	CRT; Input Console	1
Honeywell	VIP7301	CRT; Input Consoles	2
Honeywell	MTU9109	Disk Tape Drive	2
Honeywell	PRU9109	Hi-speed Printer	2
Honeywell	AJ460	Input Console Dsk Un	1
Honeywell	VIP7205	Input/Status Console	1
Honeywell	PRU7006	Ltr-Quality Printer	1
Honeywell	MSS9104	Mass Storage Units	3
Honeywell	TWO9104	Operator Console	1

OFFICE: Idaho State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
IBM	3	Card Data Recorder	1
Int. Data Sci. Inc.	60	EIA Int/Breakout Box	1
Intertec	Superbrain	Microcomputer	1
Mannesmann/Tally	MT180I	Dot Matrix Printer (loan ARS)	1
Mannesmann/Tally	MT180I	Dot Matrix Printer	16
Monroe	1830	Calculator	2
Monroe	1620	Input/output Printer	1
Monroe	392RW	Magnetic Tape Unit	1
Okidata	84	Printer	1
Paradyne	2961-01	Multiplexer	1
Ram	11-001	Acoustical modems	2
Ramtek/Omron	802AG	CRT	2
Ramtek/Omron	8130	CRT	7
Ramtek/Omron	8025	CRT	1
Ramtek/Omron	8025AG	User Room Crt	2
Science Acc.	GP-3	Digitizer	1
Sola	-	Line Voltage Regul.	1
T-Bar Inc.	5722	Switch CRT/Printer	5
Tandberg	TDV2200S	CRT (1 loan ARS)	2
Tandberg	TDV2200S	CRT Terminal	24
Tektronix	4010-1	Card Terminal	1
Tektronix	4631	GIS Printer	1
Tektronix	4114A	GIS Terminal	1
Tektronix	4610	Hard-copy Unit	1
Teletype	43	TTY Terminal	1
Televideo	950	CRT Terminal	2
Texas Inst.	765	TTY Terminal	1
Texas Inst.	OMNI800	TTY Terminal	1
Texas Inst.	OMNI800	TTY Terminal/Printer	1
Texas Inst.	765	TTY Terminal/Printer	1
Topaz	22072	Line Voltage Regulat.	2
UDS	212LP	Modem	4
UDS	103JLP	Modem	7
UDS	212A	Modem	1
UDS	212LP	Modem (loan 12)	1
UDS	212LP	Modem (loan 13)	1
UDS	103JLP	Modem (loan I1)	1
UDS	212LP	Modem (loan I39)	1
Ven-Tel	212-3E	Autocial modem	1
Ven-Tel	212-3E	Autodial (loan I3)	1

OFFICE: Idaho State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Ven-Tel	ED1200-31	Autodial Modem	1
Ven-Tel	AD103-1	Modem	1
Wang	4250-OA	Arch. Wkstn.	1
Wang	OIS-140	CPU	1
Wang	2236DE	CRT Terminal	1
Wang	2270-2	CRT Terminal	1
Wang	PC-PM016	Dot Matrix Printer	1
Wang	DSF-55	Dual Sheet Fdr.	4
Wang	2231W3	Graphic Printer	1
Wang	PC-PM014	Ltr-Quality Printer	1
Wang	PC-XC3	Micrcomputer	2
Wang	2200VP	Microcomputer	1
Wang	DW/OS-55	Printer	4
Wang	64K OIS	Workstation	11
Wang (Misso)	PC-PM016	Dot Matrix Printer	1
Wang(Misso)	PC-XC3	Microcomputer	1
Wright Line	-	Tape Storage Units	2
Xerox	1700	TTY Terminal	1

MONTANA DETAILED INVENTORY

As of 3/86

OFFICE: Montana State Office - Inventory as of 10/85

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Alanthus	T320	Printer Terminal	2
Alanthus	T300	Printer Terminal	1
Altek	-	Console	1
Altek	-	Digitizer	1
Altek	-	Table	1
Altek	-	Tape Unit	1
Anadex	-	Printer	3
AT&T	-	Telecomm. Circuits (1200 Baud)	7
AT&T	-	Telecomm. Circuits (4800 Baud)	4
Beehive	DM30	Microcomputer, MicroB	1
Burroughs	-	Microcomputer	1
Codex	6030	Multiplexer	1
Data General	-	Microcomputer, Disk Drive	3
DataSouth	DS180	Printer	4
DEC	T1220	Printer Terminals	8
Dynatech	-	Multiplexers	8
Gandalf	-	Matrix Switch	1
General Electric	T1232	Printer Terminals	3
Honeywell	57	16-Port MLCP	2
Honeywell	47	Cartridge Disk 10 megabyte	1
Honeywell	47	Mass Storage Units 256 megabyte	3
Honeywell	47	Minicomputer 2 megabyte	1
Honeywell	47	Printer 300 LPM	1
Honeywell	47	Printer 900 LPM	1
Honeywell	57	SIP	-
Honeywell	47	Tape Drives 9-Track	2
Honeywell	57	Upgrade	-
Honeywell	7305	VIP Terminals	2
Honeywell	7801	VIP Terminals	8
Honeywell	7205	VIP Terminals	8
Honeywell	7813	VIP Terminals	4
IBM	-	Disk Drive	1
IBM	-	PC Microcomputer	1
IBM	-	Printer	1
Mannesmann Tally	MT180	Printer	25
Micro Peripheral Inc.	-	Printer	1
Nicolet Zeta	3610	Plotter	1
Nicolet Zeta	C63	Tape Controller	1
OCLC	-	CRT Terminal (Loaner)	1
Okidata	-	Printer	1

OFFICE: Montana State Office - Inventory as of 10/85

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Omnidata	217	Datapod/Cassette Reader	1
Omron	8025	CRT Terminals	4
Ramtek	8130	CRT Terminals	2
Tandberg	TDV 2200 S	CRT Terminals	30
Tektronics	4907	Disk Drives	6
Tektronics	4611	Hard Copier	3
Tektronics	4054	Microcomputer	3
Televideo	950	CRT Terminals	5
Texas Instrument	0040	Compact Computer	2
Texas Instrument	-	Printer/Plotter	2
Texas Instrument	733	Terminal	1
Ven-Tel	MD-212-1E	Modem	20
Wang	PC3	-	14
Wang	2200	Microcomputer, Printer, Disk Drive	1

NEVADA DETAILED INVENTORY

As of 3/86

OFFICE: Nevada State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Alanthus	ADM-3	CRT	7
Alanthus	LA-36	Hardcopy	8
Alanthus	LA-100	Hardcopy	12
Alanthus	LA-120	Hardcopy	5
AT&T	3002 Lines	Data Circuit	1
Data General	20	CPU	2
Data General	VIS500	Terminal	2
Execuport	3000	Portable Term	6
FTS	Comm Lines	Dial-up Circuit	1
General Elec	Terminet	Hardcopy	1
Henco	INFO 8	Release 9.0	1
Honeywell	PRU 9104	300 Ipm Printer	1
Honeywell	PRU 9109	900 Ipm Printer	1
Honeywell	ZHL 1412	Advanced Assember (MACRO)	1
Honeywell	ZHL 1332	Advanced COCOL	1
Honeywell	ZHL 1272	Advanced FORTRAN	1
Honeywell	ZHL 1312	BASIC Interpreter/Compiler	1
Honeywell	CRU 9101	Card Reader	1
Honeywell	TWU 9104	Console	1
Honeywell	VIP7205	CRT	8
Honeywell	VIP7801	CRT	4
Honeywell	VIP7813	CRT	3
Honeywell	ZHC 1492	DEF II, Data Entry Facility	1
Honeywell	ZHS 1412	GCOS 6-MOD 400-REL.3.0	1
Honeywell	ZHC 2602	LHDLC, Remote Facilities	0
Honeywell	MSU 9104	Mass Storage	2
Honeywell	Level-6	Minicomputer	1
Honeywell	ZHF 1092	Sort Merge Utility	1
Honeywell	MTU 9101	Tape Drives	2
Honeywell	ZHP 1132	UPF-Production Facility	1
Micom	6212	Modem	6
Micom	6210	Outdial	1
Micom	Micro600	Port Selector	1
Nevada Bell	3002 Lines	Data Circuit	2
Nevada Bell	Comm Lines	Dial-up Circuit	16
Nevada Bell	Comm Lines	Watt Lines	2
Racal-Vadic	VA3457PX3	Modem	13
Racal-Vadic	VA3451PA	Modem	28
Racal-Vadic	VA811DX MX3	Modem	1
Racal-Vadic	VA3481PM3	Modem	2
Racal-Vadic	VA 831 A3	Modem	1

OFFICE: Nevada State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Ramtek	8025	CRT	6
Rixon	T103J	Modem	1
Sikes	822-S565	Dual Disk Dr	1
Sikes	812-S560	Single Disk Dr	6
Tally	MT180I	Printer	13
Tanberg	TDV2200S	CRT	14
Tektronix	4907	Disk Drive	2
Tektronix	4054	Graphics CRT	1
Tektronix	4663	Plotter	1
Tektronix	4956	Tablet	1
Televideo	950	CRT	1
Texas Inst.	810R0	Printer	1
Ven-Tel	MD212	Modem	5
Wang	DW/OS-55	55 cps Daisy	1
Wang	PC-PM014	Daisy Printer	2
Wang	PC-PM016	Matrix Printer	7
Wang	PC-PM005	Microcomputer	9
Wang	OIS-105	Word Processor	2
Wang	OIS-130A	Word Processor	1
Wang	OIS-50	Word Processor	1
Wang	OIS-40	Word Processor	8
Zeta	3653SX	Drum Plotter	1

NEW MEXICO DETAILED INVENTORY

As of 3/86

OFFICE: New Mexico State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Apple	Apple IIC	Microcomputer	2
Burroughs	CPU MDL 3185	CPU	1
Burroughs	7318	Magnetic Disk Unit (1)	1
Burroughs	MDL B92453	Printer	1
Burroughs	MT 983	Video Display	3
Codex	IMS-7800	Intelligent Matrix Switch	1
Codex	9600	Modem	11
Codex	6005	Multiplexor	11
Codex	6030	Multiplexor	1
Data General	TP 1	Hardcopy Printer	1
Data General	4216	Line Printer	1
Data General	6236	Logical Disk Units	2
Data General	6026	Logical Disk Units	3
Data General	Eclipse M/600	Minicomputer	1
Data General	6061	Tape Drive	1
Data General	6053	Terminals	9
DataSouth	DS-180	Dot-Matrix H/C/ Printer	2
Decwriters II	*	Hardcopy	21
Henco	INFO-9	*	1
Honeywell	ZHC 1412	ADV. Assembler	1
Honeywell	ZHL 1332	ADV. Cobol	1
Honeywell	9101	ASYNC Comm.	2
Honeywell	9116	Cartridge Disk	1
Honeywell	9104	Comm. Pac.	1
Honeywell	7801	CRT	15
Honeywell	7813	CRT	26
Honeywell	7205	CRT	6
Honeywell	ZHC 1492	DEF-II	1
Honeywell	9101	Diskette	1
Honeywell	CMC 9038	EDAC Memory	8
Honeywell	ZHS 1412	GCOS-6 MOD 400	1
Honeywell	9106	HDLC Comm. Proc.	1
Honeywell	9104	Line Printer (300)	1
Honeywell	9109	Line Printer (900)	1
Honeywell	9104	Mass Storage Units	3
Honeywell	47	Minicomputer	1
Honeywell	NMLCP	Multiline Comm. (16 ports)	2
Honeywell	9103	Multiline Comm. Proc.	1
Honeywell	ZHP 2602	RNP-6 with LHDLC, RFF, RBF, FII, RCF, ATI	0
Honeywell	*	Scorpeo	1

OFFICE: New Mexico State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	7813	Slave Printer	16
Honeywell	7066	Slave Printer	1
Honeywell	ZHF 1092	SORT/MERGE	1
Honeywell	(7813)	Tandberg CRT	2
Honeywell	9109	Tape Drives	2
Honeywell	1132	UPF	1
Omron/Ramtek	*	CRT	5
Racal-Milgo	VA-212	Auto-Dial Modem	4
Racal-Milgo	24LSI	Modem	1
Racal-Milgo	MPS48	Modem	3
Racal-Milgo	MPS 9601	Modem	4
Racal-Milgo	24LSI	Modem	10
Racal-Milgo	160	Multiplexor	6
Racal-Milgo	080	Multiplexor	7
Racal-Milgo	320	Multiplexor	4
Tektronix	4014	Graphics Terminal	6
Tektronix	4054	Graphics Terminal	1
Ven-Tel	MD212	Modem	4
Visual	500	Graphics Terminal	2
Wang	5577	192/40 Matrix Printer	1
Wang	6581W	35 CPS Daisy Printer	5
Wang	6581WC	35 CPS Daisy Printer	12
Wang	DN/05-55	55 CPS Daisy Printer	2
Wang	4250-OA	64K Arch Workstation	2
Wang	5846-4	64K Engo Workstation	1
Wang	TC-5846-4	64K Engo Workstation	1
Wang	5947	64K Mini Archiving Workstation	9
Wang	TC-5947	64K TC Archiving Workstation	1
Wang	5536-4	64K Workstation	1
Wang	5846-4	64K Workstation	1
Wang	5846-4	64K Workstation	2
Wang	015-140-3	Central Processing Unit	1
Wang	015-40	Central Processing Unit	5
Wang	015-105	Central Processing Unit	2
Wang	015-115-2	Central Processing Unit	3
Wang	015-60	Central Processing Unit	2
Wang	6581-WC	CPS Daisy Printer	1
Wang	DW/05-55	Daisy Printer 55 CPS	1
Wang	PC-003B	Microcomputer	2
Wang	PC-XC3	Microcomputer	3

OFFICE: New Mexico State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Wang	PC-XC4	Microcomputer	1
Wang	WS-5947	Mini Archiver	1
Wang	TC-5536-4	TC Workstation 64K	1
Wang	5536-4-TC	Telecommunicating Workstation	1
Wang	TC-5846-4	Telecommunicating Workstation	1
Wang	WS-5536-4	Workstation 64K	2
Wang	5947	Workstation 64K Mini Arching	1
Zeta	3610/C63	Plotter	2
Zeta	3653 SX	Plotter	1

OREGON DETAILED INVENTORY

As of 3/86

OFFICE: Oregon State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Alanthus	S-550	Disk Unit	1
Calcomp	5180	Plotter	7
Data General	Dasher	CRTS	4
Data General	D410	CRT	8
Data General	Model 20	Microcomputer	2
Data General	C-330	Printers	1
Data General	C-330	Mass Storage Units	3
Data General	C-330	Tape Drives	1
Data General	C-330	Minicomputer	1
Data General	C-330	Mass Storage Unit	3
Datapoint	-	CRT	1
Datapoint	-	Printing Terminal	1
DEC	Rainbow 100	Microcomputer	1
Digital	LA-120	Printing Terminal	26
Digital	LA-100	Printing Terminal	1
Epson	-	Printer	4
GE	Terminet	Printing Terminal	1
Hewlett-Packard	9020	Minicomputers	6
Hewlett-Packard	9845	Minicomputers	1
Hewlett-Packard	7574	Plotter	2
Honeywell	7205	CRT	4
Honeywell	7801	CRTS	4
Honeywell	Level 6	Mass Storage Units	3
Honeywell	Level 6	Tape Drives	2
Honeywell	Level 6	Minicomputer	1
Honeywell	Level 6	Card Reader	1

OFFICE: Oregon State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	Level 6	Printers	2
IBM	3178	CRT	1
IBM		Card Punch	1
Intertec	Superbrain	Microcomputer	4
Kaypro	-	Microcomputer	2
Lear-Siegler	ADM-5	CRT	1
Mannesman/Tally	-	Printer	33
Okidata	84	Printer	1
Okidata	82	Printer	4
Omnidata		Data recorder	53
Omron (Ramtek)	8025	CRT	22
Philips	-	Microcomputer	15
Radio Shack	TRS-80	Microcomputer	21
Rixon	-	Multiplexor	16
Sikes	8230	Disk Unit	1
Tandberg	-	CRT	42
Techtran	-	Disk Unit	11
Tektronix	4631	Hard Copier	3
Tektronix	4014	Terminals	5
Tektronix	4954	Graphics Tablet	3
Tektronix	4125	Terminals	1
Televideo	950	CRT	1
Texas Instruments	765	Printing Terminal	7
Visual	100	CRT	1
Wang	PC	Microcomputer	62
Zeta	-	Plotter	1

WYOMING DETAILED INVENTORY

As of 3/86

OFFICE: Wyoming State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Access	-	Microfiche Retriever	1
ADM	3A	CRT	1
ADS	Viewpoint	CRT	3
Altec	-	Digitizer	3
Anadex	DP9500	Printer	3
Beehive	DM-30	CRT	1
Beehive	Micro 3	CRT	1
Bell	212A	Data Phone	1
Bell	209	Data Phone	1
Burroughs	B94	CPU	1
Burroughs	MT985	CRT	4
Burroughs	B9493-20	Fixed Disk	1
Burroughs	B92	Printer	2
Burroughs	AP330	Validator	2
Calcomp	1073	36" Vector Plotter	4
Calcomp	9000	Digitizer	4
Calcomp	8000	Digitizers	2
Codex	200	DNC5	1
Codex	7800	IMS	1
Codex	SP14.4	Modem	5
Codex	CS9600	Modem	9
Codex	SP14.4	Modem	5
Codex	6005	Multiplexer	21
Codex	6030	Multiplexer	1
Data General	6040	Console	1
Data General	M-600	CPU	1
Data General	6053	CRT	0
Data General	D200	CRT	0
Data General	6122	Disk Drive	1
Data General	6061	Disk Drive	1
Data General	-	Disk Packs	15
Data General	M20	Microcomputer (incld. Printer & Disk Drive)	1
Data General	M10SP	Microcomputer (includes Printer and Disk Drive)	1
Data General	M20	Microcomputer (includes Terminal, Printer, and Disk Drive)	1
Data General	4300	Printer	1
Data General	6026	Tape Drive	1
Data General	-	Tapes	63
Data South	DS180	CRT	1
Data South	DS180	Printer	9
Dest	202	OCR	1
DG	Dashers	CRT	2
Digital	LA120	Printer/Term	17
Digital	DEC-100	Printer/Term	5
Florida Data	BNV	Printer	1

OFFICE: Wyoming State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	CDS9116	Cart Disk	1
Honeywell	-	Cart. Disks	30
Honeywell	TWU9104	Console	1
Honeywell	57	CPU	1
Honeywell	7205	CRT	5
Honeywell	7813	CRT	3
Honeywell	7801	CRT	11
Honeywell	MSU9104	Disk Drive	2
Honeywell	DIU9103	Diskette Drive	1
Honeywell	PRU9109	Printer	1
Honeywell	PRU9103	Printer	1
Honeywell	MTU9109	Tape Drive	2
Honeywell	-	Tapes	60
Honeywell Software	SHL928	Assembler	1
Honeywell Software	SHL933	Cobol A	1
Honeywell Software	SHL917	Data Entry F	1
Honeywell Software	SHL927	Fortran A	1
Honeywell Software	-	INFO	1
Honeywell Software	SHS915	Mod 400 Ex	1
Honeywell Software	SHC964	RNP/6	1
HP	1000	Computer	1
HP	2621P	CRT	1
IBM	PC-XT	Micro Computer (inclu. Printer/Disk Drive)	6
Intertec	Superbrain	Microcomputer	2
Lear Siegler	ADM-3A	CRT	1
Lear Siegler	ADM-31	CRT	1
Lear Siegler	ADM-5	CRT	1
Paradyne	Infolock	Encryption	1
Ramtek (Omron)	8025AG	CRT	7
Software	-	ADS/Moss	0
Software	3625	AOS Exec	1
Software	3626	Fortran 5	0
Software	3632	Sort/Merge	0
Summagraphics	ID	Digitizer Controller	1
System Ind	9751	Disk Drive	2
Tally	MT180	Printer	15
Tandberg	TDV2200	CRT	29
Tektronics	4631	Hard Copier	3
Tektronics	4907	1-8" Disk Drive	1
Tektronics	4907	2-8" Disk Drive	1
Tektronics	4907	3-8" Disk Drive	3
Tektronics	4907	3-9" Disk Drive	1
Tektronics	4956	Digitizer	1
Tektronics	4114	DVST CRT	1
Tektronics	4014	DVST CRT	2

OFFICE: Wyoming State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Tektronics	4016	DVST CRT	2
Tektronics	4054	DVST CRT (64K)	7
Tektronics	4631	Hard Copy	6
Teletype	TTY43	Printer/Terminal	7
Televideo	950	CRT	13
Televideo	924	CRT	1
Televideo	914	CRT	2
Televideo	940	CRT	1
Televideo	950	Graphics CRT	2
Texas Instruments	OMNI800	Printer	1
Texas Instruments	865	Printer	1
Trans Era	6400	Memory IBM	1
Ven-Tel	MD212-2	Modem	21
Ven-Tel	MD212-4L	Modem	4
Ven-Tel	MD212-PLUS	Modem	2
Ven-Tel	MD212-3	Modem	1
Ven-Tel	FMD272-2	Modem	6
Versatec	8236F	36" Electrostatic	1
Wang	4250-OA	Arch Workstation	3
Wang	5947-TC	Arch. WIC Stations	3
Wang	6529	Cartridge Tape Drive	2
Wang	6540-3	CPU	3
Wang	OIS-50	CPU	6
Wang	6515-4	CPU	1
Wang	6515-3	CPU	1
Wang	OIS-60	CPU	2
Wang	OIS-40	CPU/Work Station	2
Wang	6565	Disk Drive	2
Wang	PC-XC3	Microcomputer	1
Wang	PC	Microcomputer (includes Printer and Disk Drive)	1
Wang	6581W	Printer	17
Wang	DW/OS-55	Printer	8
Wang	5577	Printer	7
Wang	PTR-20	Printer	1
Wang	6581WC-1	Printer	2
Wang	OIS-TC	TC	10
Wang	5947-4TC	Arch Workstation	3
Wang	5947-TC	Arch Workstation	3
Wang	TC-AWS-4	Arch Workstation	1
Wang	5846-4TC	Arch Workstation	1
Wang	4230-TC	Workstation	4
Wang	OIS-TC		1
Wang	5846-4	Workstation	13
Wang	4230-OA	Workstation	26
Wang	5846-4	Workstation	7
Zeta	3610	Vertor Plotter with Controller	1

UTAH DETAILED INVENTORY

As of 3/86

OFFICE: Utah State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
A.M. Varityper	5310	Photocomposer	1
Altek	ATC46-3	Digitizer	1
Amtext	425	Word Processing	5
Anderson-Jacobson	A2424	Acoustic Coupler	5
Beehive	Micro-B	CRT	1
Black Box	Rib	Ring Indicator Box	1
Black Box	Bob	Breakout Box	6
Black Box	ALBC-25	Switch Box ABC	1
Black Box	Sam+	Interface Monitor	1
Black Box	SW075	Switch Box ABC RJ-11	1
Calcomp	S9602-B	Digitizing Tablet	1
Codex	LSI 24/24	Modem	2
Codex	47850	CRT	1
Codex	60120	Multiplexor	2
Codex	IMS7800	Intel. Matrix Switch	1
Codex	66031	Multiplexor	1
Comp Power Sys	25	Power Distribution	1
CTS Inc.	4000	Portable Terminal	3
CTS Inc.	3810	Portable Terminal	3
Data Sciences	60 EIA	Interface Monitor	3
Data South	DS-180	Printer	4
Data South	DS-180+	Printer	4
Dataproducts	M-100L	Printer	4
Datascribe	III	Lettering Machine	1
Digital	1210	Printer Terminal	3
Digital	T300	Printer Terminal	1
Digital	LA512-BC	Printer	1
Digital	1220	Printer Terminal	19
Eaton	LRC 7000	Printer	6
Epson	MX-80	Printer	4
Epson	EX-80	Printer	1
Fibronics	FM039-2	Wang Coax Balun	2
Florida Data	OSP130	Printer	1
Gandalf	PIN9106	Multiplexer	2
Gandalf	MLDS-122F	Short Haul Modem	10
Gandalf	SMLDS 349	Short Haul Modem	2
Gandalf	MLDS-122	Short Haul Modem	60
General Elec	1232	Printer Terminal	1
Gulf & Western	1000	Security Monitor	1
Halcyon	H4896	Modem	2
Halycon	801A-08	Data Monitor	1
Hewlett-Packard	HP9114A	Disk Drive	1
Honeywell	DCE9606	----	1
Honeywell	SHL127	Advanced Fortran	1

OFFICE: Utah State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	PRU9104	300 LPM Printer	1
Honeywell	DCM9101	Async Comm Pac	1
Honeywell	PRU9109	900 LPM Printer	1
Honeywell	CDS9116	Cartridge Disk Unit	1
Honeywell	CAB9036	Cabinet	1
Honeywell	CPS9561	Central Processor L6	1
Honeywell	CAB9037	Cabinet Expanison	2
Honeywell	KCM9101	Console Dev Pac	1
Honeywell	VIP7801	CRT	5
Honeywell	VIP7813	CRT	14
Honeywell	SHC949	Data Entry FAC II	1
Honeywell	VIP7205	CRT	9
Honeywell	SHF909	GCOS-6 Sort Utility	1
Honeywell	SHL933	GCOS 6 Adv. COBOL	1
Honeywell	DCM9106	HDLC Comm Pac	1
Honeywell	SHL928	GCOS 6 Ass./Mac. Pro	1
Honeywell	SHD908	INFO-6	1
Honeywell	MSU9104	Mass Storage Unit	1
Honeywell	MTC9102	Mag Tape Drive	1
Honeywell	MSS9104	Mass Storage Unit	1
Honeywell	MTU9109	Mag Tape Drive	2
Honeywell	CMC9654	Memory 1024KB	1
Honeywell	CPF9519	MDL 43 to 47 Upgrade	1
Honeywell	CMC9038	Memory 256KB	3
Honeywell	CAB9402	Megabus Expan 9-Slot	1
Honeywell	CMM9006	Memory 32KB	3
Honeywell	SHS921	MOD 400 Executive	1
Honeywell	CMC9009	Memory Control W/32K	1
Honeywell	MLC9103	Multiline Comm Pac	2
Honeywell	CPF9501	Memory Mgt Option	1
Honeywell	TWU9104	Operator Console	1
Honeywell	MLC9640	Multiline Comm Pac	1
Honeywell	PSS9004	Power Dist. Unit	1
Honeywell	MDC9101	Multiple Dev Control	1
Honeywell	DCM9103	Sync Comm Pac	1
Honeywell	PRM9101	Printer Dev Pac	2
Honeywell	PRF9102	Vertical Format Unit	1
Honeywell	SHC964	RNP-6	1
Honeywell	DCM9101	Async Comm Pac	4
Honeywell	MSC-9615	Controller	2
Honeywell	CPK 70	47-57 Upgrade	1
Honeywell	MSU-9619	Disk Drive	1
Honeywell	SHC949	Data Entry Fac II	1
Honeywell		Mag Disk Unit	1

OFFICE: Utah State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Honeywell	VAF7821	Buffered Pir Adaptor	1
Honeywell	PRU7066	Printer	1
IBM	XT	Micro-Computer	1
IBM	5160	Mag Disk Unit	1
Infotron	CA600/4790	Remote Quad 1/0 Card	4
Infotron	CA790/4M4	Quad Channel Adapter	6
Infotron	CL790LM380	Link Module	2
Infotron	SM600/9600	Multiplexer	1
Infotron	CL790LM600	Link Module	1
Infotron	SM616/5790	Romote Link Unit	1
Infotron	SM388/9600	Multiplexer	2
Infotron	792/V.29DS	Modem	2
Infotron	992NP/SU	Network Processor	1
Intertec	D5510	Disc System	1
Intertec	Superbrain	Micro Computer	1
IQ Technologies	SC817	Smart Cable	1
Lanier	103	Word Processing	2
Lanier	_____	Word Processing	1
Lear Siegler	ADM-22	CRT	1
Lear Siegler	V-203	CRT	5
Lear Siegler	ADM-5	CRT	1
Mannesmann/Tally	MT 180	Printer	21
Micom	ME726	Short Haul Modem	5
Micom	ME772	Short Haul Modem	12
Micom	M431	Short Haul Modem	21
Micom	SHM-NPR1	Short Haul Modem	5
Moore	1000	Decollator	1
MSI	85	Bar Code Reader	3
NEC	N212AR	Modem	1
Nicolet Zeta	3653SX	Drum Plotter	1
Numonics	277117	Grahpics Calculator	1
Numonics	1224	Graphics Calculator	5
Numonics	1210	Graphics Calculator	3
Numonics	1250	Graphics Calculator	7
Numonics	251	Graphics Calculator	1
Omnidata	217	Datapod Chip Reader	1
Omron	8025	CRT	8
Penril	212A	Modem	1
Penril	300/1200	Modem	1
Philips	-	Monitor,PC,Color	1
Philips	P3100-PC	PC w/1HD,1FD,Tape BU	6
Qume	S3-45	Printer	3
Racal-Vadic	VA3484G	Modem	2
Racal-Vadic	VA3484GX3	Rack Mounted Modem	6

OFFICE: Utah State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Racal-Vadic	VA3455G	Modem	8
Racal-Vadic	VA1680AX	Modem Rack	1
Racal-Vadic	VA212	Modem	1
Ramtek	8130	CRT	1
Ramtek	8025	CRT	1
Sci. Rad. Corp	5014	Infrared Transmitter	1
Solana Electron	SHE822MUX	Multiplexor	2
South Hills	SHE-310	ABDE Switch	2
Starnet	601-0001	Inline Repeater	2
Stnd Register	250	Burster	1
Superior Elect.	CR7102PCU	Power Conditioner	1
Sykes	8220	Dual Disk Storage	2
Sykes	8120	Single Disk Storage	3
T-Bar	5712	Switch Box ABC	1
T-Bar	5745	Switch Box Crossover	1
T-Bar	5722	Switch Box ABC	21
Talos	8482	Digitizer	2
Tandberg	TDV 2200 S	CRT	21
Tektronix	4952	Graphic Input Device	2
Tektronix	4054	Graphics System	3
Tektronix	4907	File Manager	2
Tektronix	4014-4	Graphics Terminal	1
Tektronix	4611	Photostatic Printer	1
Tektronix	4016-1	Graphics Terminal	2
Tektronix	4662	Plotter	1
Tektronix	4631	Hard Copy Unit	2
Tektronix	4954	Digitizer	1
Televideo	950	CRT	5
Texas Instruments	Omni 800	Printer	2
Texas Instruments	745	Portable Terminal	2
Thomson	CM36512 VI	Color Monitor	1
Topaz	70303	Power Conditioner	8
Ven-Tel	MD-212-3	Modem	26
Ven-Tel	MD-201-3	Rack Mounted Modem	1
Ven-Tel	MD-201-4E	Modem	1
Ven-Tel	MD-212-2	Rack Mounted Modem	12
Ven-Tel	DS-1200-3	Modem Rack	1
Ven-Tel	MD-202-5	Rack Mounted Modem	10
Ven-Tel	MD-202-6E	Modem	10
Ven-Tel	-	Rack Mounted Modem	1
Ven-Tel	MD-212-8	Modem	4
Ven-Tel	1200-31	Modem	3
Visual	500	CRT	5
Visual	110	CRT	1

OFFICE: Utah State Office - Inventory as of 3/86

MANUFACTURER	MODEL	ITEM DESCRIPTION	QUANTITY
Wang	5974	CRT	1
Wang	2270-2	Magnetic Data	1
Wang	2200	Central Processor	1
Wang	PC-XC3	Hard Disk	1
Wang	2226A	Operator Console	1
Wang	-----	Micro-Comp	1
Wang	DW22-20	Printer	1
Wang	PC-0028-8	Micro-Comp W/Disk	1
Wang	2231W-3	Printer	1
Wang	OIS-40	WP CPU	4
Wang	OIS-060	WP CPU	2
Wang	OIS-60	WP CPU	2
Wang	OIS-50	WP CPU	2
Wang	____	WP Workstation	15
Wang	-	CRT	1
Wang	PCPM-012	Printer	1
Wang	PCPM-016	Printer	2
Wang	PM-004-B	CRT	1
Wang	Winchester	Hard Disk	1
Western Telemat	SS-8	Data Switch	1

APPENDIX B
OVERVIEW OF BLM

This appendix contains a brief overview of the Bureau of Land Management -- its mission, and its organizational and ADP management structures.

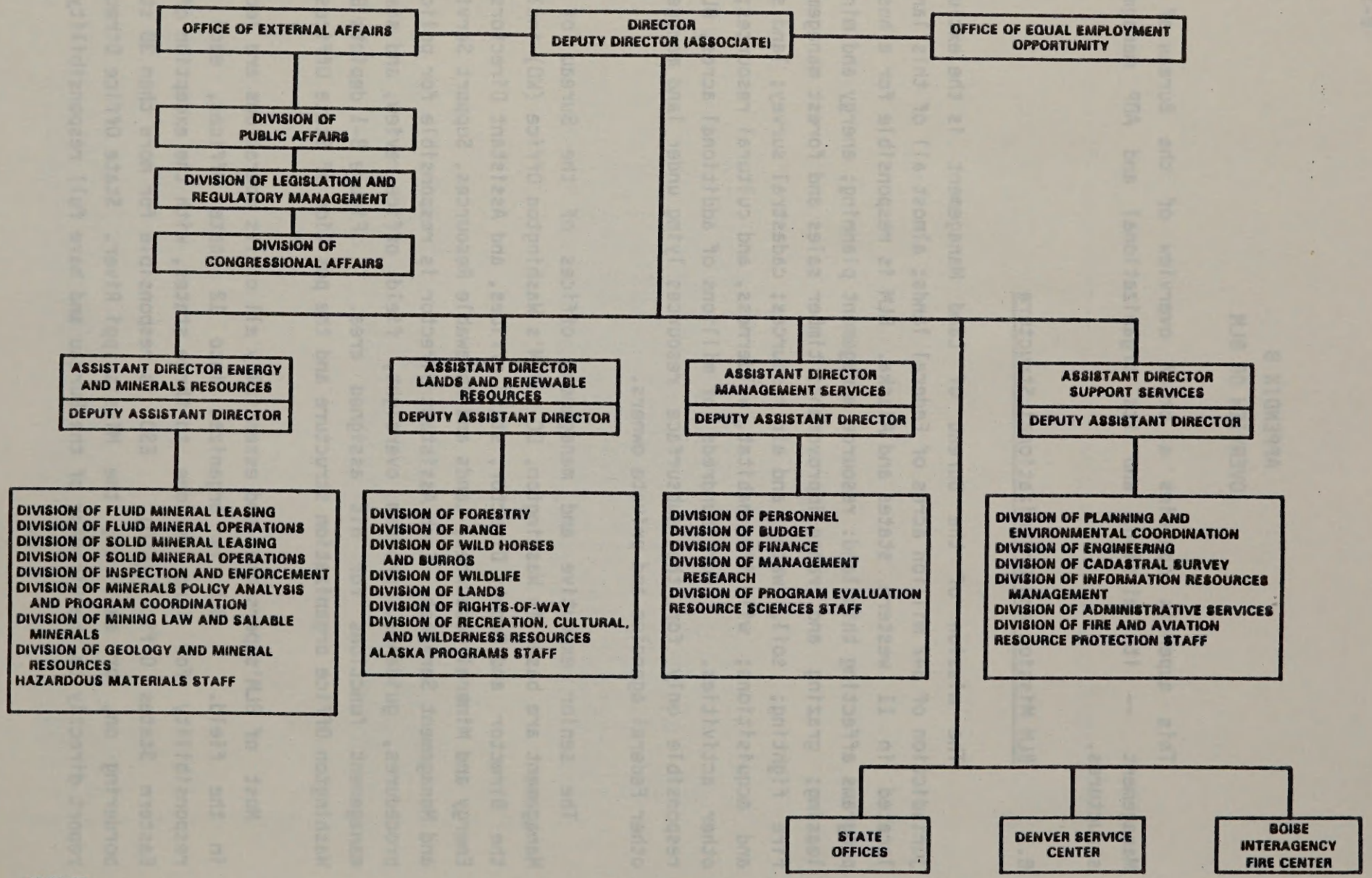
B.1 BLM Mission and Organizational Structure

The mission of the Bureau of Land Management is the exclusive jurisdiction of 342 million acres of Federal lands; almost all of this land is located in 11 western states and Alaska. BLM is responsible for a host of programs affecting this land: resource management planning; energy and mineral leasing; grazing and range improvement; timber sales and forest management; fire fighting; soil, water, and air resources; cadastral survey; land sales and acquisitions; wildlife habitat, wilderness, and cultural resources; and other activities. For hundreds of millions of additional acres, BLM is responsible only for the subsurface resources lying under land managed by other Federal agencies and private owners.

The senior executive and management offices of the Bureau of Land Management are based in Washington, DC. BLM's Washington Office (WO) includes the Director and Deputy Director, staff offices, and Assistant Directors for Energy and Mineral Resources, Lands and Renewable Resources, Support Services, and Management Services. Each Assistant Director is responsible for policies, procedures, guidance, program oversight, field office review, and similar management functions for his assigned area. Figure B-1 depicts BLM's Washington Office organization structure and the position of State Offices.

Most of BLM's personnel and essentially all of its operations are located in the field. BLM is organized into 12 State Offices, each with responsibility for land in one to three states, with the exception of the Eastern States Office (ESO). ESO is responsible for more than 30 states bordering on, or east of, the Mississippi River. State Office Directors report directly to the Director of the Bureau and have full responsibility for

Figure B-1. BLM's Washington Office organization.


OFFICE OF EXTERNAL AFFAIRS
DIRECTOR
DEPUTY DIRECTOR (ASSOCIATE)
OFFICE OF EQUAL EMPLOYMENT OPPORTUNITY
DIVISION OF PUBLIC AFFAIRS
DIVISION OF LEGISLATION AND REGULATORY MANAGEMENT
DIVISION OF CONGRESSIONAL AFFAIRS
ASSISTANT DIRECTOR ENERGY AND MINERALS RESOURCES
DEPUTY ASSISTANT DIRECTOR
ASSISTANT DIRECTOR LANDS AND RENEWABLE RESOURCES
DEPUTY ASSISTANT DIRECTOR
ASSISTANT DIRECTOR MANAGEMENT SERVICES
DEPUTY ASSISTANT DIRECTOR
ASSISTANT DIRECTOR SUPPORT SERVICES
DEPUTY ASSISTANT DIRECTOR
DIVISION OF FLUID MINERAL LEASING
DIVISION OF FLUID MINERAL OPERATIONS
DIVISION OF SOLID MINERAL LEASING
DIVISION OF SOLID MINERAL OPERATIONS
DIVISION OF INSPECTION AND ENFORCEMENT
DIVISION OF MINERALS POLICY ANALYSIS AND PROGRAM COORDINATION
DIVISION OF MINING LAW AND SALABLE MINERALS
DIVISION OF GEOLOGY AND MINERAL RESOURCES
HAZARDOUS MATERIALS STAFF
DIVISION OF FORESTRY
DIVISION OF RANGE
DIVISION OF WILD HORSES AND BURROS
DIVISION OF WILDLIFE
DIVISION OF LANDS
DIVISION OF RIGHTS-OF-WAY
DIVISION OF RECREATION, CULTURAL, AND WILDERNESS RESOURCES
ALASKA PROGRAMS STAFF
DIVISION OF PERSONNEL
DIVISION OF BUDGET
DIVISION OF FINANCE
DIVISION OF MANAGEMENT RESEARCH
DIVISION OF PROGRAM EVALUATION
RESOURCE SCIENCES STAFF
DIVISION OF PLANNING AND ENVIRONMENTAL COORDINATION
DIVISION OF ENGINEERING
DIVISION OF CADASTRAL SURVEY
DIVISION OF INFORMATION RESOURCES MANAGEMENT
DIVISION OF ADMINISTRATIVE SERVICES
DIVISION OF FIRE AND AVIATION
RESOURCE PROTECTION STAFF
STATE OFFICES
DENVER SERVICE CENTER
BOISE INTERAGENCY FIRE CENTER

10/26/85

all BLM programs on land within their jurisdiction. Each State Office is supported by two to ten District Offices, which in turn oversee Resource Area Offices. Most direct operational functions are performed by the District and Resource Area Offices. Figure B-2 shows the location of the Bureau's State and District Offices. Figure B-3 depicts the standard organization for each State and District Office.

In addition to its State, District, and Resource Area Offices, BLM also maintains a service center in Denver, Colorado, and has administrative responsibility for the Boise Interagency Fire Center (BIFC). The Denver Service Center (DSC) reports directly to the Bureau Director. DSC operates BLM's central computer center, performs administrative processing functions (such as payroll/personnel and accounting), and provides centralized expertise in engineering and other technical activities.

BLM's field offices vary substantially in size and emphasis. Some Districts -- Medford, Oregon, for example -- are as large as many State Offices; similarly, some Resource Area Offices are almost as large as small Districts, although most have no more than a dozen personnel. Because of differences in the resources found on Federal land in various areas, different State Offices stress different programs. For example, the forestry program is extremely large and important in Oregon, whereas energy and minerals exploration and development are most critical in Wyoming and New Mexico. As a result of these variations, specific program functions may be performed at different organizational levels in different State Offices. This wide range of size and emphasis has a major impact on the range of ADP hardware and software needed to support the field offices.

B.2 BLM ADP Management Structure

Bureauwide ADP policy is the responsibility of the Division of Information Resources Management (DIRM), a unit of Management Services in the Washington Office. DIRM is structured into three branches: Information Systems, Telecommunications, and Records Management. Information Systems directs policy for most ADP systems, with the exception of Geographic

B-2
Most of BLM's Personnel and Operations are in its Field Offices

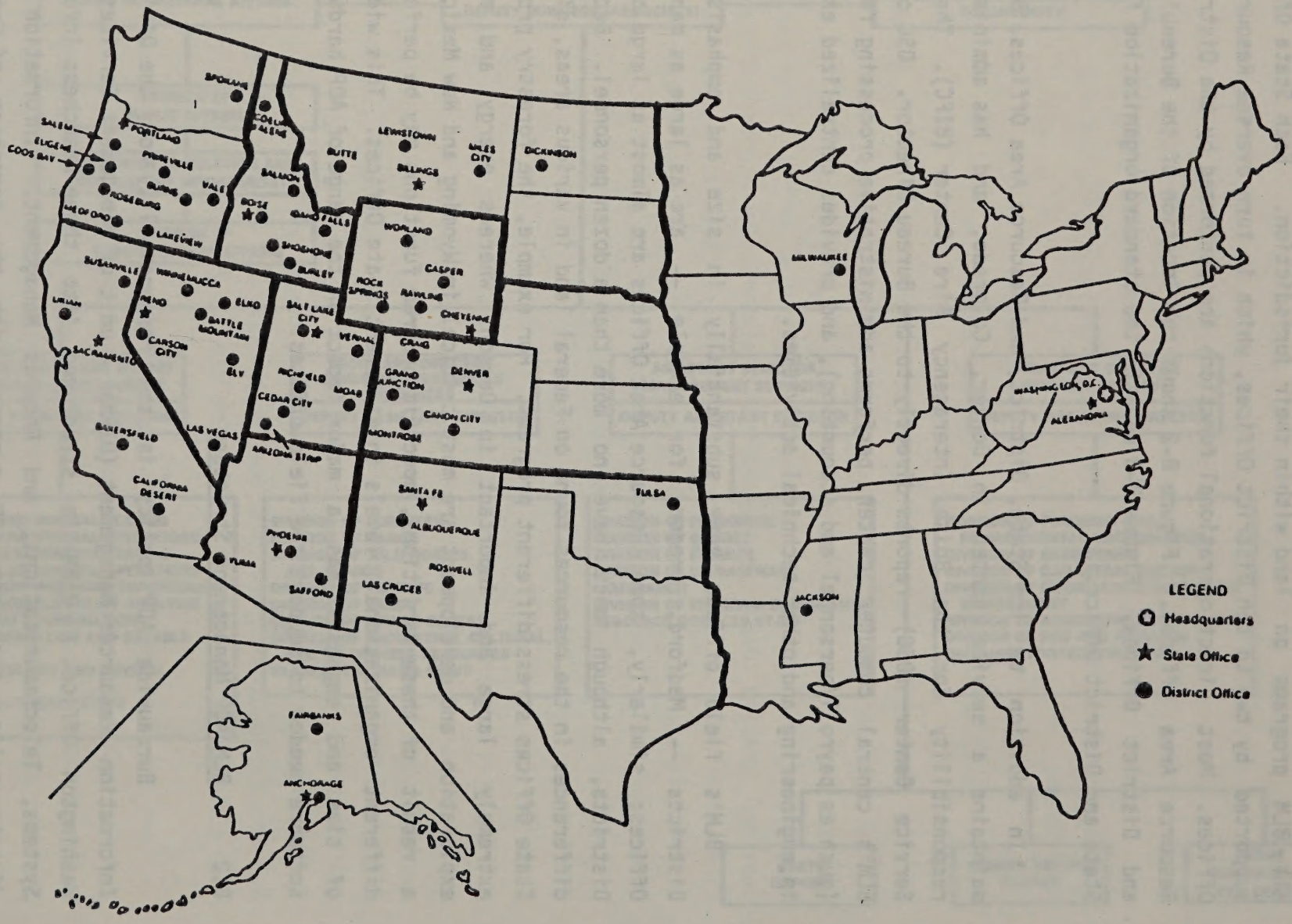
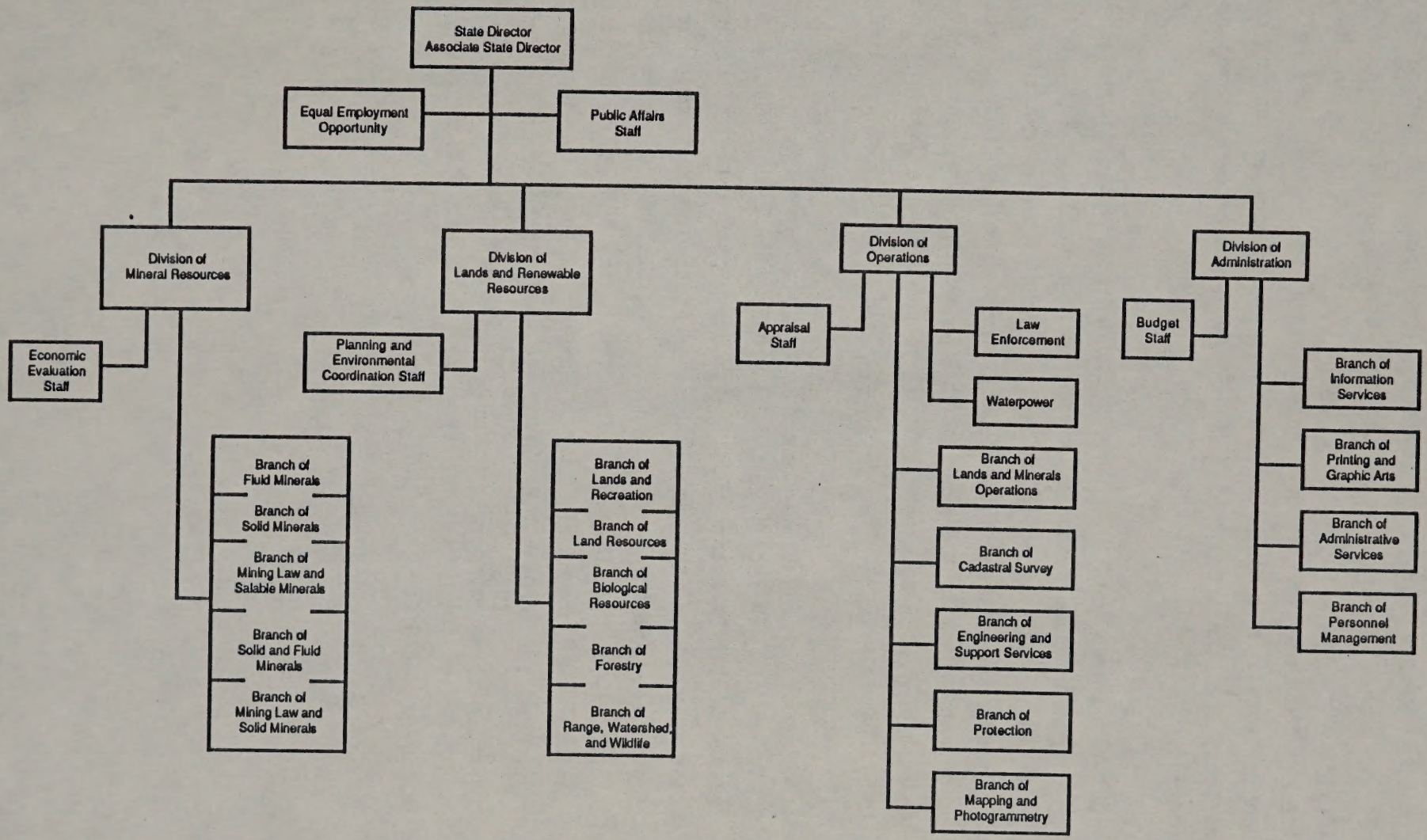


Figure B-3. BLM's Field Office organization.

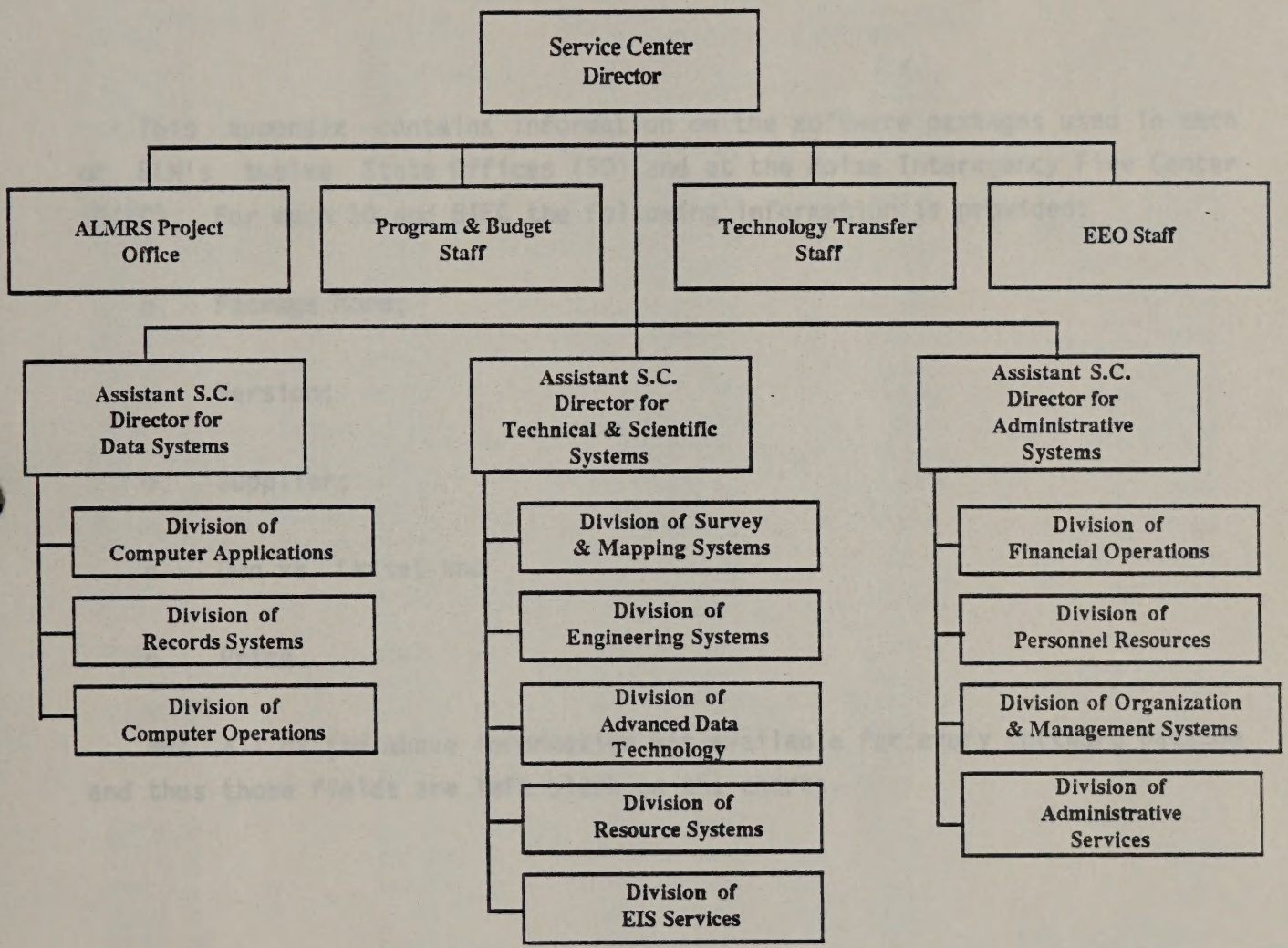

State Director
Associate State Director
Equal Employment Opportunity
Public Affairs Staff
Division of Mineral Resources
Economic Evaluation Staff
Branch of Fluid Minerals
Branch of Solid Minerals
Branch of Mining Law and Salable Minerals
Branch of Solid and Fluid Minerals
Branch of Mining Law and Solid Minerals
Division of Lands and Renewable Resources
Planning and Environmental Coordination Staff
Branch of Lands and Recreation
Branch of Land Resources
Branch of Biological Resources
Branch of Forestry
Branch of Range, Watershed, and Wildlife
Division of Operations
Appraisal Staff
Law Enforcement
Waterpower
Branch of Lands and Minerals Operations
Branch of Cadastral Survey
Branch of Engineering and Support Services
Branch of Protection
Branch of Mapping and Photogrammetry
Division of Administration
Budget Staff
Branch of Information Services
Branch of Printing and Graphic Arts
Branch of Administrative Services
Branch of Personnel Management

Information System (GIS) and Office Automation. GIS is managed within the States and the Denver Service Center. Office Automation is managed by the Directives Management Branch of Administrative Services in the Washington Office but some of the States have technical Office Automation responsibilities. Microcomputer training, networking, evaluation and software management are the responsibility of the Division of Information Resources Management.

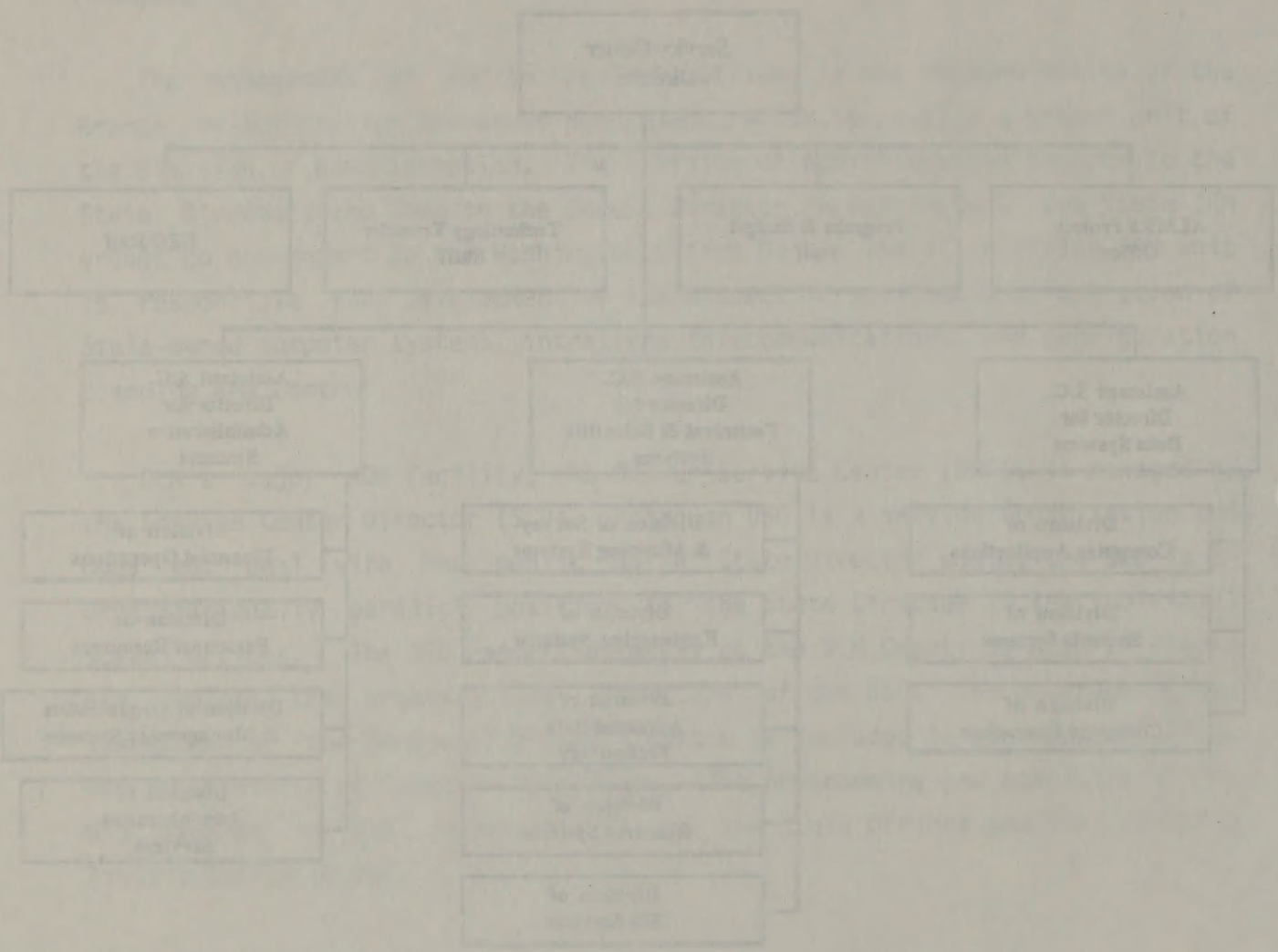
The management of ADP in the State Offices is the responsibility of the Branch of Information Resources Management, which is usually a branch unit of the Division of Administration. The Division of Administration reports to the State Director, and then to the Deputy Director in Washington. The State IRM groups do not report to the Washington Office DIRM. The State Office IRM unit is responsible for development of State-specific applications, operation of State-owned computer systems, intraState telecommunications, and configuration planning and control.

BLM's major ADP facility, the Denver Service Center (DSC), is managed by the Service Center Director (SCD). Although DSC is a service organization and does not deal with the public as a State Director would, the SCD is an organizationally parallel position to the State Director in the individual State Offices. The SCD reports directly to the BLM Deputy Director. Figure B-4 depicts the organizational structure of the DSC. The programming and operation of the Honeywell DPS-8/70 system is included in the responsibility of the Division of Computer Operations. The programming and operation of the GIS systems is the responsibility of the State Offices and the ALMRS-GIS Project Office at DSC.

FIGURE B-4
DENVER SERVICE CENTER ORGANIZATIONAL CHART


Service Center Director
ALMRS Project Office
Program & Budget Staff
Technology Transfer Staff
EEO Staff
Assistant S.C. Director for Data Systems
Division of Computer Applications
Division of Records Systems
Division of Computer Operations
Assistant S.C. Director for Technical & Scientific Systems
Division of Survey & Mapping Systems
Division of Engineering Systems
Division of Advanced Data Technology
Division of Resource Systems
Division of EIS Services
Assistant S.C. Director for Administrative Systems
Division of Financial Operations
Division of Personnel Resources
Division of Organization & Management Systems
Division of Administrative Services

As of June 1987



APPENDIX C

LEASE/PRICE INFORMATION FOR BLM STATE OFFICES' PROPRIETARY SOFTWARE PACKAGES

This appendix contains information on the software packages used in each of BLM's twelve State Offices (SO) and at the Boise Interagency Fire Center (BIFC). For each SO and BIFC the following information is provided:

- Package Name;
- Version;
- Supplier;
- Own vs. Lease; and
- Price

Not all of the above information was available for every software package and thus those fields are left blank on the charts.

C-1
SO Proprietary Software Packages
Alaska

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Lease	$ 564/yr
COBOL 74	4.0	Honeywell	Lease	$ 420/yr
BASIC	4.1	Honeywell	Lease	$ 180/yr
INFO	9.24	Henco	Lease	$ 625/yr
INFO	5.4	Honeywell	Own	
UPF	2.0	Honeywell	Lease	$ 84/yr
DEF	3.0	Honeywell	Lease	$ 144/yr
SORT/MERGE	4.3	Honeywell	Lease	$ 72/yr
OAS E-Mail	3.1	Honeywell	Lease	$ 408/yr
Screen Proc	SP-2	CSS	Own	$ 2000
List Mods		Murach	Own	$ 200
TB/SP/BP/SC	3.1	ICS	Lease	$ 3150/yr
FFTE6/EZ	3.1	ICS	Lease	$ 3150/yr
RNP-6	3.1	Honeywell	Lease	$ 252/yr
Macro Assembler	1.1	Honeywell	Lease	$ 132/yr
OAS Sp. Corrector	3.1	Honeywell	Lease	$ 1100/yr
OAS Info Calc	3.1	Honeywell	Lease	$ 468/yr
OAS Doc Proc	3.1	Honeywell	Lease	$ 1752/yr
OAS Recd Proc	3.1	Honeywell	Lease	$ 624/yr
OAS Doc Trans	3.1	Honeywell	Lease	$ 168/yr
AOS/VS	6.03	Data General	Own	$ 1665
Assembler	6.00	Data General	Own	
COBOL 74	3.10.01	Data General	Own	$ 4660
FORTRAN V	6.16	Data General	Own	
FORTRAN 77	3.11.6	Data General	Own	
INFOS II	4.10.00	Data General	Own	
SORT/MERGE	3.10	Data General	Own	$ 1040
ZODIAC	5.10	Data General	Own	$ 100
XTF	5.10	Data General	Own	$ 100
SWAT	4.10	Data General	Own	$ 1256
Performance Pkg	3.00	Data General	Own	$ 1872
F5-Plot Lib		Calcomp	Own	$ 500
F77-Plot Lib		Calcomp	Own	$ 500
F4-Plotlib		Zeta/Nicolet		
F77-Plotlib		Zeta/Nicolet		
F5-Plotlib		Versatec		
F77-Plotlib		Versatec	Own	$ 4000
Plot10-F5 Lib		Tektronics		
Plot10-F77 IGL Lib		Tektronics	Own	$ 9959

NOTE: Some figures were not available.

C-2
SO Proprietary Software Packages
Arizona

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-7	Mod400,3	Honeywell	Lease	$ 564/yr
COBOL 74		Honeywell	Lease	$ 420/yr
FORTRAN 77		Honeywell	Lease	$ 228/yr
BASIC	Rel. 4	Honeywell	Lease	$ 96/yr
DEF	2.0	Honeywell	Lease	$ 84/yr
SCREENWRIT	3.2	Honeywell	Lease	$ 156/yr
SORT/MERGE	4.3	Honeywell	Lease	$ 74/yr
TPS6	3.1	Honeywell		
RNP6	3.1	Honeywell	Lease	$ 252/yr
2780/3780	2.7	Honeywell	Lease	$ 48/yr
OAS-Doc Transfer	2.1	Honeywell	Lease	$ 168/yr
Assembler		Honeywell	Lease	$ 132/yr
OAS Records Processing		Honeywell	Lease	$ 624/yr
OAS Info Calc		Honeywell	Lease	$ 468/yr
OAS Doc Processing		Honeywell	Lease	$1752/yr
Electronic Mail Facility				$ 408
BSC Transport Facility				$ 24
AOS	7.2	Data General	Lease	$2160/yr

NOTE: Some figures were not available.

C-3
SO Proprietary Software Packages
BIFC

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod 400,3	Honeywell	Lease	
COBOL 74	MOD 400	Honeywell	Lease	
BASIC	Mod 400	Honeywell	Lease	
INFO	9.25	Henco	Lease	
UPF	Mod 400	Honeywell	Lease	
DEF	Mod 400	Honeywell	Own	
SCREENWRIT	Mod 400	Honeywell	Lease	
Screen Processor	SP2	GMS Systems	Own	$7000
VISION	Mod 400	Honeywell	Lease	
Scorpio	Mod 400	Honeywell	Lease	
Assembler	Mod 400	Honeywell	Lease	
AOS	6.06	Data General	Own	
Assembler	6.06	Data General	Own	
FORTRAN 77	3.10	Data General	Own	Bundled
PASCAL	2.0	Data General	Own	Bundled
BASIC	3.20	Data General	Own	Bundled
INFOS II	4.10	Data General	Own	Bundled
SORT/MERGE		Data General	Own	
CEO	2.20	Data General	Own	
FORTRAN 77-16	3.00	Data General	Own	$3600
CEO Toolkit	2.20	Data General	$ 243	
SWAT	4.00	Data General	Own	$ 588
SWAT-16	2.11	Data General	Own	$ 588
Zodiac	5.00	Data General	Own	$2235
X.25	5.20	Data General	Own	$ 837
MINITAB	2.20	Data General	Own	Bundled
X-DEN/PRT		Data General	Own	$ 780

NOTE: Some figures were not available.

C-4
SO Proprietary Software Packages
California

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod 400,3	Honeywell	Own	
COBOL 74		Honeywell	Own	
BASIC		Honeywell	Own	
DEF		Honeywell	Own	
SCREENWRIT		Honeywell	Own	
SORT/MERGE		Honeywell	Own	
VFORMS		Honeywell	Own	
AOS	7.00	Data General		
FORTRAN 66		Data General		
BASIC		Data General		
INFOS II		Data General		
SORT/MERGE		Data General		

NOTE: Some figures were not available.

C-5
SO Proprietary Software Packages
Colorado

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod 400	Honeywell		
COBOL 74	400.3	Honeywell		
FORTRAN 77	400.3	Honeywell		
INFO	9.24	Henco		
DEF	400.3	Honeywell		
SORT/MERGE	400.3	Honeywell		
AOS	6.06	Data General	Own	$13000
FORTRAN V	6.2	Data General	Own	$ 5430
IDEA	3.2	Data General	Own	$ 4350
INFOS II	4.0	Data General	Own	$ 2700
RJE 80	2.1	Data General	Own	$ 1900
SORT/MERGE	3.1	Data General	Own	$ 2070
Info Cen	6.3	BCI	Own	$25000

NOTE: Some figures were not available.

C-6
SO Proprietary Software Packages
Eastern States Office

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod 400, 3.1	Honeywell	Lease	$ 47/mo
COBOL 74	2.0	Honeywell	Lease	$ 35/mo
INFO	9.24	Henco	Lease	$ 52/mo
UPF	3.1	Honeywell	Lease	$ 7/mo
DEF	3.6	Honeywell	Lease	$ 12/mo
SCREENWRIT	3.6	Honeywell	Lease	$ 13/mo
SORT/MERGE	4.3	Honeywell	Lease	$ 6/mo

NOTE: Some figures were not available.

C-7
SO Proprietary Software Packages
Idaho

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	$1500
COBOL 74		Honeywell	Own	$ 420
FORTRAN 77		Honeywell	Own	$2742
UPF		Honeywell	Own	$ 84
DEF		Honeywell	Own	$1400
Assembler		Honeywell	Own	$ 132
Scorpio		Honeywell	Own	$ 156
E-Mail		Honeywell	Own	$ 408
RMP-6		Honeywell	Own	$1300
O/S		Prime	Own	$ 250
FORTRAN 77		Prime	Own	$ 599
Level C		Prime		
PRIMOS	2.0	Prime	Own	Bundled

NOTE: Some figures were not available.

C-8
SO Proprietary Software Packages
Montana

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,5	Honeywell	Own	
COBOL 74		Honeywell	Own	
FORTRAN 77		Honeywell	Own	
INFO-6		Honeywell	Own	
BSTF		Honeywell	Own	
UPF		Honeywell	Own	
DEF-II		Honeywell	Own	
SORT/MERGE		Honeywell	Own	
Scorpio		Honeywell	Own	
RNP-6		Honeywell	Own	
2780/3780		Honeywell	Own	
Assembler		Honeywell	Own	
PRIMOS		Prime		

NOTE: Some figures were not available.

C-9
SO Proprietary Software Packages
Nevada

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	$1,500
COBOL 74	4	Honeywell	Own	$ 420
FORTRAN 77	2.1	Honeywell	Own	$2,742
BASIC	4.1	Honeywell	Own	
UPF	2.0	Honeywell	Own	
DEF	3.0	Honeywell	Own	$ 84
SORT/MERGE	3.0	Honeywell	Own	$1,400
Vision	3.1	Honeywell	Own	
HASP	3.3	Honeywell	Own	
RNP-6	3.1	Honeywell	Own	
AOS		Prime		
MOSS		Prime		

NOTE: Some figures were not available.

C-10
SO Proprietary Software Packages
New Mexico

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	
BASIC		Honeywell	Own	
SCREENWRIT		Honeywell	Own	
SORT/MERGE		Honeywell	Own	
ICS		Honeywell	Own	
ESSPE6+		Honeywell	Own	
RNP6		Honeywell	Own	
2780/3780		Honeywell	Own	
AOS	7.2	Data General	Own	$ 500
COBOL 68	3.11	Data General	Own	
FORTRAN V	6.15	Data General	Own	$3000
BASIC	1.21	Data General	Own	
SORT/MERGE	4.10	Data General	Own	

NOTE: Some figures were not available.

C-11
SO Proprietary Software Packages
Oregon

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	
COBOL 74	4	Honeywell	Own	
DEF	2	Honeywell	Own	
SORT/MERGE	4.3	Honeywell	Own	
AOS	7.02	Data General		
FORTRAN V		Data General		
INFOS II		Data General	Own	
SORT/MERGE	2.02	Data General	Own	
SED	7.0	Data General	Own	
OS	20.1.1	Prime	Own	$ 250
FORTRAN 77		Prime	Own	$ 599
GKS		Prime	Own	$ 63
PRIMEX		Prime	Own	$ 850
X.25		Prime	Own	$ 780
RJE Util		Prime	Own	$ 322

NOTE: Some figures were not available.

C-12
SO Proprietary Software Packages
Utah

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	
COBOL 74	4.0	Honeywell	Own	$3000
FORTRAN 77	2.1	Honeywell	Own	$2000
SORT/MERGE		Honeywell	Own	
C Compiler	1.0	Honeywell	Own	$2500
PRIMOS	20.2	Prime	Own	
Assembler	16.3	Prime	Own	
FORTRAN 88	20.2	Prime	Own	$ 599
C Compiler	1.0	Prime	Own	$ 850
PRIMIX	1.0	Prime	Own	w/ 'C'
OAS	4.0	Prime	Own	$ 150
GKS	1.0	Prime	Own	$ 63

NOTE: Some figures were not available.

C-13
SO Proprietary Software Packages
Wyoming

Package Name	Version	Supplier	Own vs. Lease	Price
GCOS-6	Mod400,3	Honeywell	Own	
COBOL 74	4.0	Honeywell	Own	
FORTRAN 77	2.1	Honeywell	Own	
INFO	9.24	Henco	Own	
DEF	2.0	Honeywell	Own	
SORT/MERGE	4.3	Honeywell	Own	
RNP6		Honeywell	Own	
AOS	7.1	Data General	Own	
FORTRAN V	6.10	Data General	Own	
SORT/MERGE	3.02	Data General	Own	
MOSS				
COS				

NOTE: Some figures were not available.

APPENDIX D

FSMSC MODEL OUTPUT

This appendix contains the results of running the Federal Software Management Support Center's Conversion Cost Model with data on BLM's Denver Service Center (DSC), twelve State Offices, and the Boise Interagency Fire Center (BIFC). Included for each run is:

- The listing of the cost model input data;
- The algorithms used for conversion resource estimates;
- The total results of the conversion model, broken down by converion task;
- The staffing schedule, by conversion task, for a twelve-month period; and
- The resource schedule, by conversion task, for a twelve-month period.

OUTPUT FOR

Denver Service Center

COST MODEL INPUT DATA FOR PROJECT DSC with GIS

1. Project No. (1-25 characters)==========>DSC with GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>100
4. No. of Programs (1-99999)==========>3036
5. No. of Files and Data Bases (1-99999)==========>3572
6. No. of Files/Data Bases Class A ==========>13
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>88
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>3471
11. No. of Job Streams/Independent Runs (1-99999)==========>1844
12. % of Available/Up-to-date Documentation (0-1.00)=====>.42
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.51
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>27700
20. Salary Task C. Work Package Id & Prep (0-100000)=====>27700
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>27700
22. Salary Task E. Application Program Conv (0-100000)===>27700
23. Salary Task F. Data File/Data Base Conv (0-100000)===>27700
24. Salary Task G. DCL Conversion (0-100000)==========>27700
25. Salary Task H. Redocumentation (0-100000)==========>27700
26. Salary Task I. System Testing (0-100000)==========>27700
27. Salary Task J. Acceptance Testing (0-100000)==========>27700
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>27700
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. DCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>75680
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>12000
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. DCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)=======>0
45. Other Costs Task I. System Testing (0-9999999)=======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>350000
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)==========>169360
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)=======>100000
52. Location New Dr. Rate DDI (10-100 (60 standard))=====>60

COST MODEL INPUT DATA FOR PROJECT DSC with GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>31890
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>5
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>72000
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>507012
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>349000
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>50525
84. Source/Target Language Desc (1-15 characters)========>ASPEN/2
85. Baseline New Dev Rate per Language (10-100)==========>60
86. Lines of Code Class 1 (0-9999999)==========>21240
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>3020
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>10800
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>1
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>FORTRAN
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>616
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>280424
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>320000
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT DSC with GIS

```
105. Lines of Code Class 5 (0-9999999)=====================>10500
106. Source/Target Language Desc (1-15 characters)=========>DM-IV
107. Baseline New Dev Rate per Language (10-100)==========>15
108. Lines of Code Class 1 (0-9999999)=====================>7000
109. Automated Translation % Class 1 (0-1.00)=============>.15
110. Lines of Code Class 2 (0-9999999)=====================>46100
111. Automated Translation % Class 2 (0-1.00)=============>.5
112. Lines of Code Class 3 (0-9999999)=====================>0
113. Automated Translation % Class 3 (0-1.00)=============>0
114. Lines of Code Class 4 (0-9999999)=====================>0
115. Automated Translation % Class 4 (0-1.00)=============>0
116. Lines of Code Class 5 (0-9999999)=====================>0
117. Source/Target Language Desc (1-15 characters)=========>TEX
118. Baseline New Dev Rate per Language (10-100)==========>20
119. Lines of Code Class 1 (0-9999999)=====================>2340
120. Automated Translation % Class 1 (0-1.00)=============>.15
121. Lines of Code Class 2 (0-9999999)=====================>10200
122. Automated Translation % Class 2 (0-1.00)=============>.5
123. Lines of Code Class 3 (0-9999999)=====================>600
124. Automated Translation % Class 3 (0-1.00)=============>.8
125. Lines of Code Class 4 (0-9999999)=====================>0
126. Automated Translation % Class 4 (0-1.00)=============>0
127. Lines of Code Class 5 (0-9999999)=====================>0
```

FILE: dsc_cost.dat2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  DSC with GIS              *
*   01-02-1980   01:04:45   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************
```

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  DSC with GIS              *
*   01-02-1980   01:04:52   NONCOMPATIBLE CONVERSION                         *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	11.4	27.7	315.8	10.0	31.6	0.0	347.4
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	75.7	75.7
C. WF IDENT/PREP	4.8	27.7	133.0	10.0	13.3	12.0	158.3
D. TD GENR/VALID	13.5	27.7	374.0	10.0	37.4	0.0	411.4
E. SOFTWARE CONV	16.0	27.7	498.6	10.0	49.9	0.0	548.5
F. DF/DB CONV	3.6	27.7	99.7	10.0	10.0	0.0	109.7
G. OCL CONV	1.6	27.7	44.3	10.0	4.4	0.0	48.7
H. REDOCUMENT	5.0	27.7	138.5	0.0	0.0	0.0	138.5
I. SYSTEM TEST	13.3	27.7	368.4	10.0	36.8	0.0	405.2
J. ACCEPT TEST	11.8	27.7	326.9	10.0	32.7	0.0	359.6
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	350.0	350.0
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	169.4	169.4
N. MGMT/CONT SUPT	1.7	27.7	47.1	0.0	0.0	100.0	147.1
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	100.0	100.0
TOTALS	84.7		2346.3		216.1	807.1	3369.5

```
*****************************************************************************

Cost Model Input Data File for This Run is in File          dsc_cost.dat2

*****************************************************************************
```

STAFFING SCHEDULE
PROJECT NO. DSC with GIS

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
A PLAN/ANALYSIS	27.8	55.5	53.4									
B INVENT/STUDY												
C WP IDENT/PREP			7.8	29.0	20.8							
D TD GENR/VALID			21.9	81.6	58.5							
E SOFTWARE CONV					24.2	85.8	70.2	35.7				
F DF/DB CONV					4.8	17.2	14.0	7.1				
G DCL CONV					2.2	7.6	6.2	3.2				
H REDOCUMENT							20.1	22.2	13.9	3.9		
J SYSTEM TEST								42.4	96.7	20.5		
J ACCEPT TEST										27.7	55.3	58.6
K SITE PREP												
L SYSTEM TRANS												
M CONV TRAINING												
N MGMT/CONT SPT	0.5	1.0	1.7	2.3	2.3	2.3	2.3	2.3	2.3	1.7	1.1	0.6
O TOOLS/AIDS												
SUBTOTALS	28.3	56.5	84.8	112.9	112.9	112.9	112.9	112.9	112.9	84.7	56.5	28.2

RESOURCE SCHEDULE
PROJECT NO. DSC with GIS
PAGE 1

MONTH	1	2	3	4	5	6	7	8	9	10	11	12
A PLAN/ANALYSIS												
STAFF COST	64.2	128.2	123.3									
MACH COST	10.5	10.5	10.5									
B INVENT/STUDY												
MISC COST	18.9	18.9	18.9	18.9								
C WP IDENT/PREP												
STAFF COST			18.0	67.0	48.0							
MACH COST			4.4	4.4	4.4							
MISC COST			4.0	4.0	4.0							
D TD GENR/VALID												
STAFF COST			50.5	188.3	135.1							
MACH COST			12.5	12.5	12.5							
E SOFTWARE CONV												
STAFF COST					56.0	198.1	162.1	82.4				
MACH COST					12.5	12.5	12.5	12.5				
F DF/DB CONV												
STAFF COST					11.2	39.6	32.4	16.5				
MACH COST					2.5	2.5	2.5	2.5				
G OCL CONV												
STAFF COST					5.0	17.6	14.4	7.3				
MACH COST					1.1	1.1	1.1	1.1				
H REDOCUMENT												
STAFF COST							46.4	51.2	32.0	8.9		
I SYSTEM TEST												
STAFF COST								97.8	223.3	47.3		
MACH COST								12.3	12.3	12.3		
J ACCEPT TEST												
STAFF COST										63.9	127.8	135.2
MACH COST										10.9	10.9	10.9
K SITE PREP												
MISC COST	87.5	87.5	87.5	87.5								
L SYSTEM TRANS												
M CONV TRAINING												
MISC COST											84.7	84.7
N MGMT/CONT SPT												
STAFF COST	1.2	2.3	3.9	5.3	5.3	5.3	5.3	5.3	5.3	3.9	2.5	1.4
MISC COST	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3
O TOOLS/AIDS												
MISC COST	25.0	25.0	25.0	25.0								
SUBTOTALS												
STAFF COST	65.4	130.5	195.7	260.6	260.6	260.6	260.6	260.6	260.6	124.0	130.3	136.6
MACH COST	10.5	10.5	27.4	16.9	33.0	16.1	16.1	28.3	12.3	23.2	10.9	10.9
MISC COST	139.8	139.8	143.8	143.8	12.3	8.3	8.3	8.3	8.3	8.3	93.0	93.0
TOTAL MONTH	215.7	280.8	366.9	421.3	305.9	285.0	285.0	297.3	281.2	155.5	234.2	240.5

FILE: dsc_cost[illegible]h2

OUTPUT FOR

Alaska

State Office

COST MODEL INPUT DATA FOR PROJECT AKSO COVERSION WITH GIS

1. Project No. (1-25 characters)=====================>AKSO COVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ===============>n
3. No. of Systems (1-999)============================>65
4. No. of Programs (1-99999)=========================>4537
5. No. of Files and Data Bases (1-99999)=============>612
6. No. of Files/Data Bases Class A ==================>0
7. No. of Files/Data Bases Class B ==================>0
8. No. of Files/Data Bases Class C ==================>20
9. No. of Files/Data Bases Class D ==================>0
10. No. of Files/Data Bases Class E ==================>592
11. No. of Job Streams/Independent Runs (1-99999)=======>408
12. % of Available/Up-to-date Documentation (0-1.00)=====>.64
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.07
14. % Logic Paths Required to be Executed (0-1.00)======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>32560
20. Salary Task C. Work Package Id & Prep (0-100000)=====>32560
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>32560
22. Salary Task E. Application Program Conv (0-100000)===>32560
23. Salary Task F. Data File/Data Base Conv (0-100000)===>32560
24. Salary Task G. OCL Conversion (0-100000)=============>32560
25. Salary Task H. Redocumentation (0-100000)============>32560
26. Salary Task I. System Testing (0-100000)=============>32560
27. Salary Task J. Acceptance Testing (0-100000)=========>32560
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>32560
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)======>.1
32. Machine Use % Task E. Application Conv (0-.50)======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)============>.1
34. Machine Use % Task G. OCL Conv (0-.50)==============>.1
35. Machine Use % Task I. System Test (0-.50)===========>.1
36. Machine Use % Task J. Accept Test (0-.50)===========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)======>570
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)============>0
44. Other Costs Task H. Redocumentation (0-9999999)======>0
45. Other Costs Task I. System Testing (0-9999999)======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)=======>118858
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)=====>50000
52. Baseline New Site DDL (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT AKSO COVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>6091
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>5
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>10000
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>253700
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>249651
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>1280
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)========>none
85. Baseline New Dev Rate per Language (10-100)==========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>FORTRAN
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>22400
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>60800
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>28800
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>28800
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INFUT DATA FOR PROJECT AKSO COVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>179200
106. Source/Target Language Desc (1-15 characters)========>INFO
107. Baseline New Dev Rate per Language (10-100)==========>15
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>12659
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>338
113. Automated Translation % Class 3 (0-1.00)==========>.8
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)========>ASSEMBLER
118. Baseline New Dev Rate per Language (10-100)==========>20
119. Lines of Code Class 1 (0-9999999)==========>900
120. Automated Translation % Class 1 (0-1.00)==========>0
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: aks_cost.dat2

```
##################################################################################
#  CONVERSION COST MODEL (VERSION 4) FOR PROJECT  AKSO COVERSION WITH GIS        #
#  07-27-1987   12:37:41   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING     #
##################################################################################

TASK A. SD=(( 3 *S) + ( .5 *F) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *F) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *F) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(F/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

##################################################################################
```

```
##################################################################################
#  CONVERSION COST MODEL (VERSION 4) FOR PROJECT  AKSO COVERSION WITH GIS        #
#  07-27-1987   12:37:47   NONCOMPATIBLE CONVERSION                              #
##################################################################################
```

CONVERSION TASK	STAFF-YRS	RATE ($000)	STAFF-COST ($000)	M%	MACH-COST ($000)	MISC-COST ($000)	TOT-COST ($000)
A. PLAN/ANALYSIS	11.1	32.6	361.9	10.0	36.2	0.0	398.1
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.6	0.6
C. WP IDENT/PREP	3.1	32.6	101.1	10.0	10.1	1.2	112.4
D. TD GENR/VALID	26.4	32.6	860.6	10.0	86.1	0.0	946.7
E. SOFTWARE CONV	16.8	32.6	547.7	10.0	54.8	0.0	602.5
F. DF/DB CONV	0.5	32.6	16.3	10.0	1.6	0.0	17.9
G. OCL CONV	0.3	32.6	9.8	10.0	1.0	0.0	10.8
H. REDOCUMENT	10.6	32.6	345.6	0.0	0.0	0.0	345.6
I. SYSTEM TEST	15.5	32.6	505.3	10.0	50.5	0.0	555.8
J. ACCEPT TEST	5.7	32.6	185.8	10.0	18.6	0.0	204.4
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	118.9	118.9
N. MGMT/CONT SUPT	1.8	32.6	58.7	0.0	0.0	100.0	158.7
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	50.0	50.0
TOTALS	91.8		2992.8		258.9	358.2	3609.9

```
##################################################################################

COST MODEL INPUT DATA FOR THIS RUN IN FILE            aks_cost.dat2

##################################################################################
```

RESOURCE SCHEDULE
PROJECT NO. AKSD COVERSION WITH GIS
PAGE 1

M	1	2	3	4	5	6	7	8	9
A PLAN/ANALYSIS									
STAFF COST	122.2	190.0	49.6						
MACH COST	12.1	12.1	12.1						
B INVENT/STUDY									
MISC COST	0.2	0.2	0.2	0.2					
C WP IDENT/PREP									
STAFF COST		5.7	33.3	46.9	15.1				
MACH COST		2.5	2.5	2.5	2.5				
MISC COST		0.3	0.3	0.3	0.3				
D TD GENR/VALID									
STAFF COST		48.8	283.8	399.1	129.0				
MACH COST		21.5	21.5	21.5	21.5				
E SOFTWARE CONV									
STAFF COST				41.1	303.9	202.7			
MACH COST				18.3	18.3	18.3			
F DF/DB CONV									
STAFF COST				1.2	9.0	6.0			
MACH COST				0.5	0.5	0.5			
G OCL CONV									
STAFF COST				0.7	5.4	3.6			
MACH COST				0.3	0.3	0.3			
H REDOCUMENT									
STAFF COST					26.6	173.0	89.4	56.7	
I SYSTEM TEST									
STAFF COST						103.6	277.4	124.3	
MACH COST						16.8	16.8	16.8	
J ACCEPT TEST									
STAFF COST								63.6	122.2
MACH COST								9.3	9.3
K SITE PREP									
MISC COST	21.9	21.9	21.9	21.9					
L SYSTEM TRANS									
M CONV TRAINING									
MISC COST									118.9
N MGMT/CONT SPT									
STAFF COST	2.4	4.9	7.3	9.8	9.8	9.8	7.3	4.9	2.4
MISC COST	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
O TOOLS/AIDS									
MISC COST	12.5	12.5	12.5	12.5					
SUBTOTALS									
STAFF COST	124.7	249.4	374.1	498.8	498.8	498.8	374.1	249.4	124.7
MACH COST	12.1	36.1	36.1	43.2	43.2	36.0	16.8	26.1	9.3
MISC COST	45.6	45.9	45.9	45.9	11.4	11.1	11.1	11.1	130.0
TOTAL M	182.4	331.4	456.1	587.9	553.4	545.9	402.0	286.6	264.0

STAFFING SCHEDULE
PROJECT NO. AKSO COVERSION WITH GIS

M	1	2	3	4	5	6	7	8	9
A PLAN/ANALYSIS	45.0	69.9	18.3						
B INVENT/STUDY									
C WP IDENT/PREP		2.1	12.3	17.3	5.6				
D TD GENR/VALID		17.9	104.5	146.9	47.5				
E SOFTWARE CONV				15.1	111.8	74.6			
F DF/DB CONV				0.5	3.3	2.2			
G OCL CONV				0.3	2.0	1.3			
H REDOCUMENT					9.8	63.7	32.9	20.9	
I SYSTEM TEST						38.1	102.1	45.7	
J ACCEPT TEST								23.4	45.0
K SITE PREP									
L SYSTEM TRANS									
M CONV TRAINING									
N MGMT/CONT SPT	0.9	1.8	2.7	3.6	3.6	3.6	2.7	1.8	0.9
O TOOLS/AIDS									
SUBTOTALS	45.9	91.8	137.7	183.6	183.6	183.6	137.7	91.8	45.9

OUTPUT FOR

Arizona

State Office

COST MODEL INPUT DATA FOR PROJECT ASO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>ASO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>14
4. No. of Programs (1-99999)==========>198
5. No. of Files and Data Bases (1-99999)==========>214
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>5
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>209
11. No. of Job Streams/Independent Runs (1-99999)==========>14
12. % of Available/Up-to-date Documentation (0-1.00)=====>.08
13. % Logic Paths Executed Existing Test Data (0-1.00)===>0
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>33950
20. Salary Task C. Work Package Id & Prep (0-100000)=====>33950
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>33950
22. Salary Task E. Application Program Conv (0-100000)===>33950
23. Salary Task F. Data File/Data Base Conv (0-100000)===>33950
24. Salary Task G. OCL Conversion (0-100000)==========>33950
25. Salary Task H. Redocumentation (0-100000)==========>33950
26. Salary Task I. System Testing (0-100000)==========>33950
27. Salary Task J. Acceptance Testing (0-100000)=========>33950
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>33950
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>1000
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)======>0
45. Other Costs Task I. System Testing (0-9999999)=======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)========>53600
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)=======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)======>50000
52. Baseline New Dev Rate DDL (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT ASO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>700
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>0
77. Lines of Code Class 2 (0-9999999)==========>9800
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>192350
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>0
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)========>
85. Baseline New Dev Rate per Language (10-100)==========>0
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>0
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>0
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>0
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>0
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>
96. Baseline New Dev Rate per Language (10-100)==========>0
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>0
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>0
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>0
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT ASO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)========>
107. Baseline New Dev Rate per Language (10-100)==========>0
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>0
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>0
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)========>
118. Baseline New Dev Rate per Language (10-100)==========>0
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>0
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>0
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>0
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: ASO_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ASO CONVERSION WITH GIS    *
*   01-04-1980   03:36:58   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************
```

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ASO CONVERSION WITH GIS    *
*   01-04-1980   03:37:04   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.6	34.0	20.4	10.0	2.0	0.0	22.4
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	1.0	1.0
C. WP IDENT/PREP	0.4	34.0	13.6	10.0	1.4	1.2	16.2
D. TD GENR/VALID	2.2	34.0	74.8	10.0	7.5	0.0	82.3
E. SOFTWARE CONV	1.8	34.0	61.2	10.0	6.1	0.0	67.3
F. DF/DB CONV	0.2	34.0	6.8	10.0	0.7	0.0	7.5
G. OCL CONV	0.0	34.0	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.1	34.0	3.4	0.0	0.0	0.0	3.4
I. SYSTEM TEST	0.7	34.0	23.8	10.0	2.4	0.0	26.2
J. ACCEPT TEST	0.5	34.0	17.0	10.0	1.7	0.0	18.7
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	53.6	53.6
N. MGMT/CONT SUPT	0.1	34.0	3.4	0.0	0.0	100.0	103.4
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	50.0	50.0
TOTALS	6.6		224.4		21.8	293.3	539.5

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              C:ASO_COST.DAT2

*****************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. ASO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS							
STAFF COST	11.2	9.2					
MACH COST	1.0	1.0					
B INVENT/STUDY							
MISC COST	0.3	0.3	0.3				
C WP IDENT/PREP							
STAFF COST		3.7	6.8	3.1			
MACH COST		0.5	0.5	0.5			
MISC COST		0.4	0.4	0.4			
D TD GENR/VALID							
STAFF COST		20.4	37.4	17.0			
MACH COST		2.5	2.5	2.5			
E SOFTWARE CONV							
STAFF COST				21.7	39.5		
MACH COST				3.1	3.1		
F DF/DB CONV							
STAFF COST				2.4	4.4		
MACH COST				0.3	0.3		
G OCL CONV							
H REDOCUMENT							
STAFF COST					0.3	3.1	
I SYSTEM TEST							
STAFF COST						23.8	
MACH COST						2.4	
J ACCEPT TEST							
STAFF COST						6.1	10.9
MACH COST						0.9	0.9
K SITE PREP							
MISC COST	29.2	29.2	29.2				
L SYSTEM TRANS							
M CONV TRAINING							
MISC COST							53.6
N MGMT/CONT SPT							
STAFF COST	0.3	0.6	0.6	0.6	0.6	0.6	0.3
MISC COST	14.3	14.3	14.3	14.3	14.3	14.3	14.3
O TOOLS/AIDS							
MISC COST	16.7	16.7	16.7				
SUBTOTALS							
STAFF COST	11.5	33.9	44.8	44.8	44.8	33.6	11.2
MACH COST	1.0	4.0	3.0	6.4	3.4	3.3	0.9
MISC COST	60.5	60.9	60.9	14.7	14.3	14.3	67.9
TOTAL MONTH	72.9	98.7	108.6	65.8	62.5	51.1	79.9

FILE: ASO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. ASO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS	4.0	3.2					
B INVENT/STUDY							
C WP IDENT/PREP		1.3	2.4	1.1			
D TD GENR/VALID		7.2	13.2	6.0			
E SOFTWARE CONV				7.6	14.0		
F DF/DB CONV				0.8	1.6		
G OCL CONV							
H REDOCUMENT					0.1	1.1	
I SYSTEM TEST						8.4	
J ACCEPT TEST						2.1	3.9
K SITE PREP							
L SYSTEM TRANS							
M CONV TRAINING							
N MGMT/CONT SPT	0.1	0.2	0.2	0.2	0.2	0.2	0.1
O TOOLS/AIDS							
SUBTOTALS	4.1	12.0	15.8	15.8	15.8	11.9	4.0

OUTPUT FOR

California

State Office

COST MODEL INPUT DATA FOR PROJECT CASO CONVERSION WITH GIS

```
 1.   Project No. (1-25 characters)==================>CASO CONVERSION WITH GI
S 2.    Compatible or Noncompatible? (C or N) ==========>N
 3.   No. of Systems (1-999)=========================>11
 4.   No. of Programs (1-99999)======================>114
 5.   No. of Files and Data Bases (1-99999)==========>64
 6.   No. of Files/Data Bases Class A ================>0
 7.   No. of Files/Data Bases Class B ================>0
 8.   No. of Files/Data Bases Class C ================>0
 9.   No. of Files/Data Bases Class D ================>0
 10.  No. of Files/Data Bases Class E ================>64
 11.  No. of Job Streams/Independent Runs (1-99999)=======>1
 12.  % of Available/Up-to-date Documentation (0-1.00)=====>.14
 13.  % Logic Paths Executed Existing Test Data (0-1.00)==>0
 14.  % Logic Paths Required to be Executed (0-1.00)======>.7
 15.  No. of Days Duration for Acceptance Testing (1-360)==>30
 16.  No. of Probable Reruns for Systems Testings (0-10)===>5
 17.  % Conversion Management & Contract Support (0-.30)===>.02
 18.  % of Coordination Required for Documentation (0-.30)=>.1
 19.  Salary Task A. Conv Planning/Analysis (0-100000)=====>26480
 20.  Salary Task C. Work Package Id & Prep (0-100000)=====>26480
 21.  Salary Task D. Test Data Set Gen/Valid (0-100000)====>26480
 22.  Salary Task E. Application Program Conv (0-100000)===>26480
 23.  Salary Task F. Data File/Data Base Conv (0-100000)===>26480
 24.  Salary Task G. OCL Conversion (0-100000)============>26480
 25.  Salary Task H. Redocumentation (0-100000)===========>26480
 26.  Salary Task I. System Testing (0-100000)============>26480
 27.  Salary Task J. Acceptance Testing (0-100000)========>26480
 28.  Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>26480
 29.  Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
 30.  Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
 31.  Machine Use % Task D. TD Set Gen/Valid (0-.50)======>.1
 32.  Machine Use % Task E. Application Conv (0-.50)======>.1
 33.  Machine Use % Task F. DF/DB Conv (0-.50)============>.1
 34.  Machine Use % Task G. OCL Conv (0-.50)=============>.1
 35.  Machine Use % Task I. System Test (0-.50)==========>.1
 36.  Machine Use % Task J. Accept Test (0-.50)==========>.1
 37.  Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
 38.  Other Costs Task B. Invent & Study (0-9999999)======>290
 39.  Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
 40.  Other Costs Task D. TD Gen/Valid (0-9999999)========>0
 41.  Other Costs Task E. Application Conv (0-9999999)====>0
 42.  Other Costs Task F. File/Data Base Conv (0-9999999)==>0
 43.  Other Costs Task G. OCL Conv (0-9999999)===========>0
 44.  Other Costs Task H. Redocumentation (0-9999999)=====>0
 45.  Other Costs Task I. System Testing (0-9999999)======>0
 46.  Other Costs Task J. Acceptance Testing (0-9999999)===>0
 47.  Other Costs Task K. Site Preparation (0-9999999)====>87500
 48.  Other Costs Task L. System Transition (0-9999999)====>0
 49.  Other Costs Task M. Conv Training (0-9999999)=======>81606
 50.  Other Costs Task N. Mgmt/Cont Supt (0-9999999)======>100000
 51.  Other Costs Task O. Conv Tools/Aids (0-9999999)=====>25000
 52.  Baseline New Dev Rate DDL (10-100 (60 standard))====>0
```

COST MODEL INPUT DATA FOR PROJECT CASO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)========>cobol
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>33410
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>35830
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>1400
84. Source/Target Language Desc (1-15 characters)========>NONE
85. Baseline New Dev Rate per Language (10-100)==========>10
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>NONE
96. Baseline New Dev Rate per Language (10-100)==========>10
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT CASO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: CAS_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  CASO CONVERSION WITH GIS   *
*   01-03-1980   07:11:37   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************


*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  CASO CONVERSION WITH GIS   *
*   01-03-1980   07:11:44   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.4	26.5	10.6	10.0	1.1	0.0	11.7
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	0.2	26.5	5.3	10.0	0.5	1.2	7.0
D. TD GENR/VALID	1.0	26.5	26.5	10.0	2.7	0.0	29.2
E. SOFTWARE CONV	0.4	26.5	10.6	10.0	1.1	0.0	11.7
F. DF/DB CONV	0.1	26.5	2.7	10.0	0.3	0.0	3.0
G. OCL CONV	0.0	26.5	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.1	26.5	2.7	0.0	0.0	0.0	2.7
I. SYSTEM TEST	0.4	26.5	10.6	10.0	1.1	0.0	11.7
J. ACCEPT TEST	0.3	26.5	8.0	10.0	0.8	0.0	8.8
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	81.6	81.6
N. MGMT/CONT SUPT	0.1	26.5	2.7	0.0	0.0	100.0	102.7
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	25.0	25.0
TOTALS	3.0		79.7		7.6	295.6	382.9

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              CAS_COST.DAT

*****************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. CASO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	4.7	5.9				
MACH COST	0.6	0.6				
B INVENT/STUDY						
MISC COST	0.1	0.1	0.1			
C WP IDENT/PREP						
STAFF COST		1.4	3.2	0.7		
MACH COST		0.2	0.2	0.2		
MISC COST		0.4	0.4	0.4		
D TD GENR/VALID						
STAFF COST		7.2	16.0	3.3		
MACH COST		0.9	0.9	0.9		
E SOFTWARE CONV						
STAFF COST				10.6		
MACH COST				1.1		
F DF/DB CONV						
STAFF COST				2.7		
MACH COST				0.3		
G OCL CONV						
H REDOCUMENT						
STAFF COST				0.4	2.3	
I SYSTEM TEST						
STAFF COST				1.6	9.0	
MACH COST				0.6	0.6	
J ACCEPT TEST						
STAFF COST					3.2	4.7
MACH COST					0.4	0.4
K SITE PREP						
MISC COST	29.2	29.2	29.2			
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						81.6
N MGMT/CONT SPT						
STAFF COST	0.2	0.4	0.7	0.7	0.4	0.2
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
MISC COST	8.3	8.3	8.3			
SUBTOTALS						
STAFF COST	5.0	14.9	19.9	19.9	14.9	5.0
MACH COST	0.6	1.6	1.1	3.0	1.0	0.4
MISC COST	54.3	54.7	54.7	17.1	16.7	98.3
TOTAL MONTH	59.8	71.2	75.6	40.0	32.5	103.6

FILE: CAS_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. CASO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	2.2	2.7				
B INVENT/STUDY						
C WP IDENT/PREP		0.6	1.5	0.3		
D TD GENR/VALID		3.2	7.3	1.5		
E SOFTWARE CONV				4.8		
F DF/DB CONV				1.2		
G OCL CONV						
H REDOCUMENT				0.2	1.0	
I SYSTEM TEST				0.7	4.1	
J ACCEPT TEST					1.4	2.2
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT	0.1	0.2	0.3	0.3	0.2	0.1
O TOOLS/AIDS						
SUBTOTALS	2.3	6.8	9.0	9.0	6.8	2.3

OUTPUT FOR

Colorado

State Office

COST MODEL INPUT DATA FOR PROJECT CSO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>CSO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>23
5. No. of Files and Data Bases (1-99999)==========>122
6. No. of Files/Data Bases Class A ==========>1
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>121
11. No. of Job Streams/Independent Runs (1-99999)==========>100
12. % of Available/Up-to-date Documentation (0-1.00)==========>0
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>0
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==========>30
16. No. of Probable Reruns for Systems Testings (0-10)==========>5
17. % Conversion Management & Contract Support (0-.30)==========>.02
18. % of Coordination Required for Documentation (0-.30)==========>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>25530
20. Salary Task C. Work Package Id & Prep (0-100000)==========>25530
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>25530
22. Salary Task E. Application Program Conv (0-100000)==========>25530
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>25530
24. Salary Task G. OCL Conversion (0-100000)==========>25530
25. Salary Task H. Redocumentation (0-100000)==========>25530
26. Salary Task I. System Testing (0-100000)==========>25530
27. Salary Task J. Acceptance Testing (0-100000)==========>25530
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==========>25530
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>320
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==========>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>81338
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))==========>0

COST MODEL INPUT DATA FOR PROJECT CSO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>3529
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>8235
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)========>NONE
85. Baseline New Dev Rate per Language (10-100)==========>10
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.15
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>NONE
96. Baseline New Dev Rate per Language (10-100)==========>10
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT CSO CONVERSION WITH GIS

```
105. Lines of Code Class 5 (0-9999999)==================>0
106. Source/Target Language Desc (1-15 characters)========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==================>0
109. Automated Translation % Class 1 (0-1.00)============>.15
110. Lines of Code Class 2 (0-9999999)==================>0
111. Automated Translation % Class 2 (0-1.00)============>.5
112. Lines of Code Class 3 (0-9999999)==================>0
113. Automated Translation % Class 3 (0-1.00)============>0
114. Lines of Code Class 4 (0-9999999)==================>0
115. Automated Translation % Class 4 (0-1.00)============>0
116. Lines of Code Class 5 (0-9999999)==================>0
117. Source/Target Language Desc (1-15 characters)========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==================>0
120. Automated Translation % Class 1 (0-1.00)============>.15
121. Lines of Code Class 2 (0-9999999)==================>0
122. Automated Translation % Class 2 (0-1.00)============>.5
123. Lines of Code Class 3 (0-9999999)==================>0
124. Automated Translation % Class 3 (0-1.00)============>.8
125. Lines of Code Class 4 (0-9999999)==================>0
126. Automated Translation % Class 4 (0-1.00)============>0
127. Lines of Code Class 5 (0-9999999)==================>0
```

FILE: CSO_COST.DAT2

```
*************************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  CSO CONVERSION WITH GIS          *
*   01-03-1980   07:14:24   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING      *
*************************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+(( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*************************************************************************************
```

```
*************************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  CSO CONVERSION WITH GIS          *
*   01-03-1980   07:14:30   NONCOMPATIBLE CONVERSION                                *
*************************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.3	25.5	7.7	10.0	0.8	0.0	8.5
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	0.1	25.5	2.6	10.0	0.3	1.2	4.1
D. TD GENR/VALID	0.6	25.5	15.3	10.0	1.5	0.0	16.8
E. SOFTWARE CONV	0.2	25.5	5.1	10.0	0.5	0.0	5.6
F. DF/DB CONV	0.1	25.5	2.6	10.0	0.3	0.0	2.9
G. OCL CONV	0.0	25.5	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	25.5	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.3	25.5	7.7	10.0	0.8	0.0	8.5
J. ACCEPT TEST	0.4	25.5	10.2	10.0	1.0	0.0	11.2
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	81.3	81.3
N. MGMT/CONT SUPT	0.0	25.5	0.0	0.0	0.0	100.0	100.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	2.0		51.2		5.2	270.3	326.7

```
*************************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              CSO_COST.DAT2

*************************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. CSO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	3.2	4.5				
MACH COST	0.4	0.4				
B INVENT/STUDY						
MISC COST	0.1	0.1	0.1			
C WP IDENT/PREP						
STAFF COST		0.7	1.8			
MACH COST		0.2	0.2			
MISC COST		0.6	0.6			
D TD GENR/VALID						
STAFF COST		4.4	10.9			
MACH COST		0.8	0.8			
E SOFTWARE CONV						
STAFF COST						
MACH COST						
F DF/DB CONV						
STAFF COST						
MACH COST						
G OCL CONV						
H REDOCUMENT						
I SYSTEM TEST						
STAFF COST				7.6		
MACH COST				0.8		
J ACCEPT TEST						
STAFF COST				5.1	4.8	0.3
MACH COST				0.3	0.3	0.3
K SITE PREP						
MISC COST	29.2	29.2	29.2			
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST					40.7	40.7
N MGMT/CONT SPT						
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
SUBTOTALS						
STAFF COST	3.2	9.6	12.8	12.8	4.8	0.3
MACH COST	0.4	1.3	0.9	1.1	0.3	0.3
MISC COST	45.9	46.5	46.5	16.7	57.3	57.3
TOTAL MONTH	49.5	57.4	60.2	30.5	62.4	58.0

FILE: CSO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. CSO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	1.5	2.1				
B INVENT/STUDY						
C WP IDENT/PREP		0.3	0.9			
D TD GENR/VALID		2.1	5.1			
E SOFTWARE CONV						
F DF/DB CONV						
G DCL CONV						
H REDOCUMENT						
I SYSTEM TEST				3.6		
J ACCEPT TEST				2.4	2.3	0.2
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT						
O TOOLS/AIDS						
SUBTOTALS	1.5	4.5	6.0	6.0	4.5	1.5

OUTPUT FOR

Eastern States

State Office

COST MODEL INPUT DATA FOR PROJECT FSO CONVERSION

1. Project No. (1-25 characters)==========>FSO CONVERSION
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>23
5. No. of Files and Data Bases (1-99999)==========>490
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>490
11. No. of Job Streams/Independent Runs (1-99999)==========>1
12. % of Available/Up-to-date Documentation (0-1.00)==========>.42
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>.51
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)==>5
17. % Conversion Management & Contract Support (0-.30)==>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>23350
20. Salary Task C. Work Package Id & Prep (0-100000)==========>23350
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>23350
22. Salary Task E. Application Program Conv (0-100000)==========>23350
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>23350
24. Salary Task G. OCL Conversion (0-100000)==========>23350
25. Salary Task H. Redocumentation (0-100000)==========>23350
26. Salary Task I. System Testing (0-100000)==========>23350
27. Salary Task J. Acceptance Testing (0-100000)==========>23350
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>23350
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>276
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==========>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>81740
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))==========>0

COST MODEL INPUT DATA FOR PROJECT ESD CONVERSION

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)=========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>30000
84. Source/Target Language Desc (1-15 characters)=========>none
85. Baseline New Dev Rate per Language (10-100)==========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)=========>none
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT ESO CONVERSION

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>none
107. Baseline New Dev Rate per Language (10-100)==========>15
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>none
118. Baseline New Dev Rate per Language (10-100)==========>20
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: eso_cost.dat1

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ESO CONVERSION           *
*   01-01-1980   01:23:11   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************


*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ESO CONVERSION           *
*   01-01-1980   01:23:18   NONCOMPATIBLE CONVERSION                        *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.1	23.4	2.3	10.0	0.2	0.0	2.5
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	0.2	23.4	4.7	10.0	0.5	1.2	6.4
D. TD GENR/VALID	0.7	23.4	16.4	10.0	1.6	0.0	18.0
E. SOFTWARE CONV	0.0	23.4	0.0	10.0	0.0	0.0	0.0
F. DF/DB CONV	0.4	23.4	9.4	10.0	0.9	0.0	10.3
G. OCL CONV	0.0	23.4	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	23.4	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.1	23.4	2.3	10.0	0.2	0.0	2.5
J. ACCEPT TEST	0.4	23.4	9.4	10.0	0.9	0.0	10.3
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	81.7	81.7
N. MGMT/CONT SUPT	0.0	23.4	0.0	0.0	0.0	100.0	100.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	1.9		44.5		4.3	270.7	319.5

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE          eso_cost.dat1

*****************************************************************************
```

STAFFING SCHEDULE
PROJECT NO. ESD CONVERSION

MONTH	1	2	3	4	5	6
1 PLAN/ANALYSIS	0.9	0.3				
2 INVENT/STUDY						
3 MF IDENT/PREP	0.1	0.9	1.3	0.1		
4 TP GENR/VALID	0.4	3.2	4.4	0.4		
5 SOFTWARE CONV						
6 DB CONV						
7 DC CONV						
8 REDOCUMENT						
9 SYSTEM TEST				1.2		
10 ACCEPT TEST				4.0	0.5	0.3
11 SITE PREP						
12 SYSTEM TRANS						
13 USER TRAINING						
14 MAINT/CONT SPT	0.1	0.4	0.6	0.6	0.5	0.2
15 TOOLS/AIDS						
SUBTOTALS	1.6	4.7	6.3	6.3	4.7	1.6

RESOURCE SCHEDULE
PROJECT NO. ESO CONVERSION
PAGE 1

MONTH	1	2	3	4	5	6
A ANALYSIS						
STAFF COST	2.7	0.7				
MACH COST	0.2	0.2				
C IMPLMNT/STUDY						
MISC COST	0.1	0.1	0.1			
D DATA IDENT/PREP						
STAFF COST	0.3	2.6	3.6	0.3		
MACH COST	0.2	0.2	0.2	0.2		
MISC COST	0.3	0.3	0.3	0.3		
E DD GENR/VALID						
STAFF COST	1.2	9.1	12.7	1.1		
MACH COST	0.6	0.6	0.6	0.6		
F SOFTWARE CONV						
G DD CONV						
STAFF COST						
MACH COST						
H DB CONV						
I RECOUPMENT						
J SYSTEM TEST						
STAFF COST				3.5		
MACH COST				0.3		
K ACCEPT TEST						
STAFF COST				11.5	1.5	0.8
MACH COST				0.5	0.5	0.5
L SITE PREP						
MISC COST	37.6	37.6	37.6			
M SYSTEM TRANS						
N CONV TRAINING						
MISC COST					21.1	21.1
O MGMT/CONT SET						
STAFF COST	0.3	1.1	1.7	1.7	1.4	0.6
P TOOLS/AIDS						
SUBTOTALS						
STAFF COST	4.5	13.6	18.1	18.1	2.9	1.4
MACH COST	0.9	0.9	0.8	1.5	0.5	0.5
MISC COST	38.0	38.0	38.0	0.3	21.1	21.1
TOTAL MONTH	43.4	52.5	56.9	20.0	24.5	23.0

FILE: ESO_COST.SCH

OUTPUT FOR

Idaho

State Office

COST MODEL INPUT DATA FOR PROJECT ISO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>ISO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>12
4. No. of Programs (1-99999)==========>73
5. No. of Files and Data Bases (1-99999)==========>73
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>73
11. No. of Job Streams/Independent Runs (1-99999)========>48
12. % of Available/Up-to-date Documentation (0-1.00)=====>.45
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.62
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>32080
20. Salary Task C. Work Package Id & Prep (0-100000)=====>32080
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>32080
22. Salary Task E. Application Program Conv (0-100000)===>32080
23. Salary Task F. Data File/Data Base Conv (0-100000)===>32080
24. Salary Task G. OCL Conversion (0-100000)==========>32080
25. Salary Task H. Redocumentation (0-100000)==========>32080
26. Salary Task I. System Testing (0-100000)==========>32080
27. Salary Task J. Acceptance Testing (0-100000)=========>32080
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>32080
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>3100
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)======>0
45. Other Costs Task I. System Testing (0-9999999)=======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)========>56950
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)=======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)======>25000
52. Baseline New Dev Rate DDL (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT ISO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>890
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>5
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>0
77. Lines of Code Class 2 (0-9999999)==========>6630
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>0
81. Lines of Code Class 4 (0-9999999)==========>15470
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)========>FORTRAN
85. Baseline New Dev Rate per Language (10-100)==========>30
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>0
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>0
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>0
92. Lines of Code Class 4 (0-9999999)==========>9000
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>MAP
96. Baseline New Dev Rate per Language (10-100)==========>15
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>0
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>0
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>0
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT ISO CONVERSION WITH GIS

```
105. Lines of Code Class 5 (0-9999999)====================>0
106. Source/Target Language Desc (1-15 characters)========>EDITOR
107. Baseline New Dev Rate per Language (10-100)==========>20
108. Lines of Code Class 1 (0-9999999)====================>0
109. Automated Translation % Class 1 (0-1.00)=============>0
110. Lines of Code Class 2 (0-9999999)====================>0
111. Automated Translation % Class 2 (0-1.00)=============>0
112. Lines of Code Class 3 (0-9999999)====================>0
113. Automated Translation % Class 3 (0-1.00)=============>0
114. Lines of Code Class 4 (0-9999999)====================>0
115. Automated Translation % Class 4 (0-1.00)=============>0
116. Lines of Code Class 5 (0-9999999)====================>0
117. Source/Target Language Desc (1-15 characters)========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>15
119. Lines of Code Class 1 (0-9999999)====================>0
120. Automated Translation % Class 1 (0-1.00)=============>0
121. Lines of Code Class 2 (0-9999999)====================>0
122. Automated Translation % Class 2 (0-1.00)=============>0
123. Lines of Code Class 3 (0-9999999)====================>0
124. Automated Translation % Class 3 (0-1.00)=============>0
125. Lines of Code Class 4 (0-9999999)====================>0
126. Automated Translation % Class 4 (0-1.00)=============>0
127. Lines of Code Class 5 (0-9999999)====================>0
```

FILE: ISO_COST.DAT2

```
*************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ISO CONVERSION WITH GIS    *
*   01-04-1980   03:44:42   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*************************************************************************


*************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  ISO CONVERSION WITH GIS    *
*   01-04-1980   03:44:48   NONCOMPATIBLE CONVERSION                          *
*************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.4	32.1	12.8	10.0	1.3	0.0	14.1
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	3.1	3.1
C. WP IDENT/PREP	0.2	32.1	6.4	10.0	0.6	1.2	8.2
D. TD GENR/VALID	0.2	32.1	6.4	10.0	0.6	0.0	7.0
E. SOFTWARE CONV	0.3	32.1	9.6	10.0	1.0	0.0	10.6
F. DF/DB CONV	0.1	32.1	3.2	10.0	0.3	0.0	3.5
G. OCL CONV	0.0	32.1	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.2	32.1	6.4	0.0	0.0	0.0	6.4
I. SYSTEM TEST	0.4	32.1	12.8	10.0	1.3	0.0	14.1
J. ACCEPT TEST	0.4	32.1	12.8	10.0	1.3	0.0	14.1
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	57.0	57.0
N. MGMT/CONT SUPT	0.0	32.1	0.0	0.0	0.0	100.0	100.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	25.0	25.0
TOTALS	2.2		70.4		6.4	273.8	350.6

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*************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              C:ISO_COST.DAT2

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RESOURCE SCHEDULE
PROJECT NO. ISO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	4.4	8.4				
MACH COST	0.6	0.6				
B INVENT/STUDY						
MISC COST	1.0	1.0	1.0			
C WP IDENT/PREP						
STAFF COST		2.4	4.0			
MACH COST		0.3	0.3			
MISC COST		0.6	0.6			
D TD GENR/VALID						
STAFF COST		2.4	4.0			
MACH COST		0.3	0.3			
E SOFTWARE CONV						
STAFF COST			7.2	2.4		
MACH COST			0.5	0.5		
F DF/DB CONV						
STAFF COST			2.4	0.8		
MACH COST			0.2	0.2		
G OCL CONV						
H REDOCUMENT						
STAFF COST				4.8	1.6	
I SYSTEM TEST						
STAFF COST				9.6	3.2	
MACH COST				0.6	0.6	
J ACCEPT TEST						
STAFF COST					8.4	4.4
MACH COST					0.6	0.6
K SITE PREP						
MISC COST	29.2	29.2	29.2			
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						57.0
N MGMT/CONT SPT						
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
MISC COST	8.3	8.3	8.3			
SUBTOTALS						
STAFF COST	4.4	13.2	17.7	17.7	13.2	4.4
MACH COST	0.6	1.3	1.3	1.3	1.3	0.6
MISC COST	55.2	55.8	55.8	16.7	16.7	73.7
TOTAL MONTH	60.3	70.3	74.7	35.6	31.2	78.7

FILE: ISO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. ISO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	1.6	3.2				
B INVENT/STUDY						
C WP IDENT/PREP		0.9	1.5			
D TD GENR/VALID		0.9	1.5			
E SOFTWARE CONV			2.7	0.9		
F DF/DB CONV			0.9	0.3		
G OCL CONV						
H REDOCUMENT				1.8	0.6	
I SYSTEM TEST				3.6	1.2	
J ACCEPT TEST					3.1	1.7
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT						
O TOOLS/AIDS						
SUBTOTALS	1.6	4.9	6.6	6.6	4.9	1.6

OUTPUT FOR

Montana

State Office

COST MODEL INPUT DATA FOR PROJECT MSO CONVESION WITH GIS

1. Project No. (1-25 characters)==========>MSO CONVESION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>21
4. No. of Programs (1-99999)==========>91
5. No. of Files and Data Bases (1-99999)==========>1747
6. No. of Files/Data Bases Class A ==========>8
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>15
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>1724
11. No. of Job Streams/Independent Runs (1-99999)========>46
12. % of Available/Up-to-date Documentation (0-1.00)=====>.35
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.04
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>29800
20. Salary Task C. Work Package Id & Prep (0-100000)=====>29800
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>29800
22. Salary Task E. Application Program Conv (0-100000)===>29800
23. Salary Task F. Data File/Data Base Conv (0-100000)===>29800
24. Salary Task G. OCL Conversion (0-100000)==========>29800
25. Salary Task H. Redocumentation (0-100000)==========>29800
26. Salary Task I. System Testing (0-100000)==========>29800
27. Salary Task J. Acceptance Testing (0-100000)=======>29800
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>29800
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>300
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)======>0
45. Other Costs Task I. System Testing (0-9999999)=======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)=======>70350
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)======>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT MSO CONVESION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>3450
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>1352
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>600
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>25400
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>10166
84. Source/Target Language Desc (1-15 characters)========>NONE
85. Baseline New Dev Rate per Language (10-100)==========>10
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>NONE
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT MSO CONVESION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: MSO_COST.DAT2

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*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  MSO CONVESION WITH GIS     *
*   01-03-1980   07:18:15   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

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*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  MSO CONVESION WITH GIS     *
*   01-03-1980   07:18:21   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE ($000)	STAFF-COST ($000)	M%	MACH-COST ($000)	MISC-COST ($000)	TOT-COST ($000)
A. PLAN/ANALYSIS	0.5	29.8	14.9	10.0	1.5	0.0	16.4
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	1.0	29.8	29.8	10.0	3.0	1.2	34.0
D. TD GENR/VALID	6.1	29.8	181.8	10.0	18.2	0.0	200.0
E. SOFTWARE CONV	0.3	29.8	8.9	10.0	0.9	0.0	9.8
F. DF/DB CONV	1.7	29.8	50.7	10.0	5.1	0.0	55.8
G. OCL CONV	0.2	29.8	6.0	10.0	0.6	0.0	6.6
H. REDOCUMENT	0.2	29.8	6.0	0.0	0.0	0.0	6.0
I. SYSTEM TEST	0.6	29.8	17.9	10.0	1.8	0.0	19.7
J. ACCEPT TEST	1.7	29.8	50.7	10.0	5.1	0.0	55.8
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	70.4	70.4
N. MGMT/CONT SUPT	0.2	29.8	6.0	0.0	0.0	100.0	106.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	12.5		372.7		36.2	259.4	668.3

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COST MODEL INPUT DATA FOR THIS RUN IN FILE              MSO_COST.DAT2

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RESOURCE SCHEDULE
PROJECT NO. MSO CONVESION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	11.8	3.1				
MACH COST	0.8	0.8				
B INVENT/STUDY						
MISC COST	0.1	0.1	0.1			
C WP IDENT/PREP						
STAFF COST	1.6	9.3	12.9	6.1		
MACH COST	0.8	0.8	0.8	0.8		
MISC COST	0.3	0.3	0.3	0.3		
D TD GENR/VALID						
STAFF COST	9.6	56.5	78.7	36.9		
MACH COST	4.6	4.6	4.6	4.6		
E SOFTWARE CONV						
STAFF COST				6.6	2.3	
MACH COST				0.4	0.4	
F DF/DB CONV						
STAFF COST				37.6	13.0	
MACH COST				2.6	2.6	
G OCL CONV						
STAFF COST				4.4	1.5	
MACH COST				0.3	0.3	
H REDOCUMENT						
STAFF COST					6.0	
I SYSTEM TEST						
STAFF COST					17.9	
MACH COST					1.8	
J ACCEPT TEST						
STAFF COST					27.9	22.8
MACH COST					2.6	2.6
K SITE PREP						
MISC COST	29.2	29.2	29.2			
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						70.4
N MGMT/CONT SPT						
STAFF COST	0.2	1.0	1.5	1.5	1.2	0.5
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
SUBTOTALS						
STAFF COST	23.3	69.8	93.1	93.1	69.8	23.3
MACH COST	6.1	6.1	5.3	8.6	7.6	2.6
MISC COST	46.2	46.2	46.2	17.0	16.7	87.1
TOTAL MONTH	75.6	122.1	144.7	118.7	94.2	112.9

FILE: MSO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. MSO CONVESION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	4.8	1.2				
B INVENT/STUDY						
C WP IDENT/PREP	0.6	3.7	5.2	2.4		
D TD GENR/VALID	3.9	22.8	31.7	14.9		
E SOFTWARE CONV				2.7	0.9	
F DF/DB CONV				15.1	5.3	
G OCL CONV				1.8	0.6	
H REDOCUMENT					2.4	
I SYSTEM TEST					7.2	
J ACCEPT TEST					11.2	9.2
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT	0.1	0.4	0.6	0.6	0.5	0.2
O TOOLS/AIDS						
SUBTOTALS	9.4	28.1	37.5	37.5	28.1	9.4

OUTPUT FOR

Nevada

State Office

COST MODEL INPUT DATA FOR PROJECT NSO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>NSO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>1
5. No. of Files and Data Bases (1-99999)==========>2507
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>2507
11. No. of Job Streams/Independent Runs (1-99999)==========>1
12. % of Available/Up-to-date Documentation (0-1.00)==========>.42
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>.51
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==========>30
16. No. of Probable Reruns for Systems Testings (0-10)==========>5
17. % Conversion Management & Contract Support (0-.30)==========>.02
18. % of Coordination Required for Documentation (0-.30)==========>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>27250
20. Salary Task C. Work Package Id & Prep (0-100000)==========>27250
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>27250
22. Salary Task E. Application Program Conv (0-100000)==========>27250
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>27250
24. Salary Task G. OCL Conversion (0-100000)==========>27250
25. Salary Task H. Redocumentation (0-100000)==========>27250
26. Salary Task I. System Testing (0-100000)==========>27250
27. Salary Task J. Acceptance Testing (0-100000)==========>27250
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==========>27250
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>323
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==========>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>63516
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))==========>0

COST MODEL INPUT DATA FOR PROJECT NSO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>5000
84. Source/Target Language Desc (1-15 characters)========>none
85. Baseline New Dev Rate per Language (10-100)==========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>none
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT NSO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>none
107. Baseline New Dev Rate per Language (10-100)==========>15
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>none
118. Baseline New Dev Rate per Language (10-100)==========>20
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: NSO_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  NSO CONVERSION WITH GIS    *
*   01-03-1980   07:20:38   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************


*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  NSO CONVERSION WITH GIS    *
*   01-03-1980   07:20:44   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE ($000)	STAFF-COST ($000)	M%	MACH-COST ($000)	MISC-COST ($000)	TOT-COST ($000)
A. PLAN/ANALYSIS	0.0	27.3	0.0	10.0	0.0	0.0	0.0
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	1.1	27.3	30.0	10.0	3.0	1.2	34.2
D. TD GENR/VALID	3.5	27.3	95.6	10.0	9.6	0.0	105.2
E. SOFTWARE CONV	0.0	27.3	0.0	10.0	0.0	0.0	0.0
F. DF/DB CONV	2.1	27.3	57.3	10.0	5.7	0.0	63.0
G. DCL CONV	0.0	27.3	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	27.3	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.2	27.3	5.5	10.0	0.6	0.0	6.1
J. ACCEPT TEST	1.6	27.3	43.7	10.0	4.4	0.0	48.1
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	63.5	63.5
N. MGMT/CONT SUPT	0.2	27.3	5.5	0.0	0.0	100.0	105.5
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	8.7		237.6		23.3	252.5	513.4

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE                NSO_COST.DAT2

*****************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. NSO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS							
B INVENT/STUDY							
MISC COST	0.1	0.1	0.1				
C WP IDENT/PREP							
STAFF COST	2.8	8.3	11.1	7.8			
MACH COST	0.8	0.8	0.8	0.8			
MISC COST	0.3	0.3	0.3	0.3			
D TD GENR/VALID							
STAFF COST	8.9	26.4	35.3	24.9			
MACH COST	2.4	2.4	2.4	2.4			
E SOFTWARE CONV							
F DF/DB CONV							
STAFF COST				13.7	43.7		
MACH COST				2.8	2.8		
G OCL CONV							
H REDOCUMENT							
I SYSTEM TEST							
STAFF COST					2.7	2.7	
MACH COST					0.3	0.3	
J ACCEPT TEST							
STAFF COST						32.0	11.7
MACH COST						2.2	2.2
K SITE PREP							
MISC COST	29.2	29.2	29.2				
L SYSTEM TRANS							
M CONV TRAINING							
MISC COST						31.8	31.8
N MGMT/CONT SPT							
STAFF COST		0.9	1.1	1.1	1.1	0.9	0.2
MISC COST		16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS							
SUBTOTALS							
STAFF COST	11.7	35.7	47.5	47.5	47.5	35.7	11.9
MACH COST	3.2	3.2	3.2	6.0	3.1	2.5	2.2
MISC COST	29.6	46.2	46.2	17.0	16.7	48.4	48.4
TOTAL MONTH	44.4	85.0	96.9	70.5	67.4	86.6	62.5

FILE: NSO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. NSO ,CONVERSION WITH GIS

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS							
B INVENT/STUDY							
C WP IDENT/PREP	1.2	3.7	4.9	3.4			
D TD GENR/VALID	3.9	11.6	15.5	11.0			
E SOFTWARE CONV							
F DF/DB CONV				6.0	19.2		
G OCL CONV							
H REDOCUMENT							
I SYSTEM TEST					1.2	1.2	
J ACCEPT TEST						14.1	5.1
K SITE PREP							
L SYSTEM TRANS							
M CONV TRAINING							
N MGMT/CONT SPT		0.4	0.5	0.5	0.5	0.4	0.1
O TOOLS/AIDS							
SUBTOTALS	5.1	15.7	20.9	20.9	20.9	15.7	5.2

OUTPUT FOR

New Mexico

State Office

COST MODEL INPUT DATA FOR PROJECT NMSO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>NMSO CONVERSION WITH GI
S 2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>23
5. No. of Files and Data Bases (1-99999)==========>219
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>219
11. No. of Job Streams/Independent Runs (1-99999)=========>1
12. % of Available/Up-to-date Documentation (0-1.00)=====>.42
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.51
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>25640
20. Salary Task C. Work Package Id & Prep (0-100000)=====>25640
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>25640
22. Salary Task E. Application Program Conv (0-100000)===>25640
23. Salary Task F. Data File/Data Base Conv (0-100000)===>25640
24. Salary Task G. OCL Conversion (0-100000)==========>25640
25. Salary Task H. Redocumentation (0-100000)==========>25640
26. Salary Task I. System Testing (0-100000)==========>25640
27. Salary Task J. Acceptance Testing (0-100000)==========>25640
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>25640
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>308
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)======>0
45. Other Costs Task I. System Testing (0-9999999)=======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)========>92728
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)=======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)======>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT NMSO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>1
73. Source/Target Language Desc (1-15 characters)=======>COBOL
74. Baseline New Dev Rate per Language (10-100)=========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>30000
84. Source/Target Language Desc (1-15 characters)=======>none
85. Baseline New Dev Rate per Language (10-100)=========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)=======>none
96. Baseline New Dev Rate per Language (10-100)=========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT NMSO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>none
107. Baseline New Dev Rate per Language (10-100)==========>15
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>none
118. Baseline New Dev Rate per Language (10-100)==========>20
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: NMS_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  NMSO CONVERSION WITH GIS   *
*   01-03-1980   07:23:43   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************
```

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  NMSO CONVERSION WITH GIS   *
*   01-03-1980   07:23:50   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.1	25.6	2.6	10.0	0.3	0.0	2.9
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WF IDENT/PREP	0.1	25.6	2.6	10.0	0.3	1.2	4.1
D. TD GENR/VALID	0.4	25.6	10.2	10.0	1.0	0.0	11.2
E. SOFTWARE CONV	0.0	25.6	0.0	10.0	0.0	0.0	0.0
F. DF/DR CONV	0.2	25.6	5.1	10.0	0.5	0.0	5.6
G. OCL CONV	0.0	25.6	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	25.6	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.1	25.6	2.6	10.0	0.3	0.0	2.9
J. ACCEPT TEST	0.2	25.6	5.1	10.0	0.5	0.0	5.6
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	92.7	92.7
N. MGMT/CONT SUPT	0.0	25.6	0.0	0.0	0.0	100.0	100.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	1.1		28.2		2.9	281.7	312.8

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              NMS_COST.DAT2

*****************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. NMSO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	1.8	0.8				
MACH COST	0.2	0.2				
B INVENT/STUDY						
MISC COST	0.1	0.1	0.1			
C WP IDENT/PREP						
STAFF COST		0.9	1.4	0.3		
MACH COST		0.1	0.1	0.1		
MISC COST		0.4	0.4	0.4		
D TD GENR/VALID						
STAFF COST		3.6	5.6	1.0		
MACH COST		0.3	0.3	0.3		
E SOFTWARE CONV						
F DF/DB CONV						
STAFF COST				5.1		
MACH COST				0.5		
G OCL CONV						
H REDOCUMENT						
I SYSTEM TEST						
STAFF COST				0.6	1.9	
MACH COST				0.2	0.2	
J ACCEPT TEST						
STAFF COST					3.4	1.8
MACH COST					0.3	0.3
K SITE PREP						
MISC COST	29.2	29.2	29.2			
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						92.7
N MGMT/CONT SPT						
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
SUBTOTALS						
STAFF COST	1.8	5.3	7.0	7.0	5.3	1.8
MACH COST	0.2	0.6	0.4	1.1	0.4	0.3
MISC COST	45.9	46.3	46.3	17.1	16.7	109.4
TOTAL MONTH	47.8	52.2	53.8	25.2	22.3	111.4

FILE: NMS_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. NMSO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	0.8	0.4				
B INVENT/STUDY						
C WP IDENT/PREP		0.4	0.7	0.1		
D TD GENR/VALID		1.7	2.6	0.5		
E SOFTWARE CONV						
F DF/DB CONV				2.4		
G OCL CONV						
H REDOCUMENT						
I SYSTEM TEST				0.3	0.9	
J ACCEPT TEST					1.6	0.8
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGNT/CONT SPT						
O TOOLS/AIDS						
SUBTOTALS	0.8	2.5	3.3	3.3	2.5	0.8

OUTPUT FOR

Oregon

State Office

COST MODEL INPUT DATA FOR PROJECT OSO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>OSO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>3
4. No. of Programs (1-99999)==========>43
5. No. of Files and Data Bases (1-99999)==========>125
6. No. of Files/Data Bases Class A ==========>21
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>50
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>54
11. No. of Job Streams/Independent Runs (1-99999)==========>1
12. % of Available/Up-to-date Documentation (0-1.00)==========>.83
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>.7
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==========>30
16. No. of Probable Reruns for Systems Testings (0-10)==========>5
17. % Conversion Management & Contract Support (0-.30)==========>.02
18. % of Coordination Required for Documentation (0-.30)==========>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>26840
20. Salary Task C. Work Package Id & Prep (0-100000)==========>26840
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>26840
22. Salary Task E. Application Program Conv (0-100000)==========>26840
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>26840
24. Salary Task G. OCL Conversion (0-100000)==========>26840
25. Salary Task H. Redocumentation (0-100000)==========>26840
26. Salary Task I. System Testing (0-100000)==========>26840
27. Salary Task J. Acceptance Testing (0-100000)==========>26840
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==========>26840
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>300
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==========>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>189878
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>0
52. Baseline New Dev Rate DDL (10-100 (60 standard))==========>0

COST MODEL INPUT DATA FOR PROJECT OSO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>520
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)===>3
73. Source/Target Language Desc (1-15 characters)=======>COBOL
74. Baseline New Dev Rate per Language (10-100)=========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>3000
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>27000
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)=======>none
85. Baseline New Dev Rate per Language (10-100)=========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)=======>BASIC
96. Baseline New Dev Rate per Language (10-100)=========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>6000
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT OSO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: OSO_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  OSO CONVERSION WITH GIS    *
*   01-04-1980   03:13:20   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+(( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************


*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  OSO CONVERSION WITH GIS    *
*   01-04-1980   03:13:27   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE ($000)	STAFF-COST ($000)	M%	MACH-COST ($000)	MISC-COST ($000)	TOT-COST ($000)
A. PLAN/ANALYSIS	0.1	26.8	2.7	10.0	0.3	0.0	3.0
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	0.1	26.8	2.7	10.0	0.3	1.2	4.2
D. TD GENR/VALID	0.1	26.8	2.7	10.0	0.3	0.0	3.0
E. SOFTWARE CONV	0.2	26.8	5.4	10.0	0.5	0.0	5.9
F. DF/DB CONV	0.5	26.8	13.4	10.0	1.3	0.0	14.7
G. DCL CONV	0.0	26.8	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.2	26.8	5.4	0.0	0.0	0.0	5.4
I. SYSTEM TEST	0.2	26.8	5.4	10.0	0.5	0.0	5.9
J. ACCEPT TEST	0.2	26.8	5.4	10.0	0.5	0.0	5.9
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	189.9	189.9
N. MGMT/CONT SUPT	0.0	26.8	0.0	0.0	0.0	100.0	100.0
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	1.6		43.1		3.7	378.9	425.7

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              OSO_COST.DAT2

*****************************************************************************
```

RESOURCE SCHEDULE
PROJECT NO. OSD CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
STAFF COST	2.7					
MACH COST	0.3					
B INVENT/STUDY						
MISC COST	0.2	0.2				
C WP IDENT/PREP						
STAFF COST		2.4	0.3			
MACH COST		0.2	0.2			
MISC COST		0.6	0.6			
D TD GENR/VALID						
STAFF COST		2.4	0.3			
MACH COST		0.2	0.2			
E SOFTWARE CONV						
STAFF COST		0.9	2.7	1.7		
MACH COST		0.2	0.2	0.2		
F DF/DB CONV						
STAFF COST		2.3	6.8	4.3		
MACH COST		0.4	0.4	0.4		
G OCL CONV						
H REDOCUMENT						
STAFF COST			0.6	2.6	2.1	
I SYSTEM TEST						
STAFF COST				2.1	3.2	
MACH COST				0.3	0.3	
J ACCEPT TEST						
STAFF COST					2.7	2.7
MACH COST					0.3	0.3
K SITE PREP						
MISC COST	43.8	43.8				
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						189.9
N MGMT/CONT SPT						
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
SUBTOTALS						
STAFF COST	2.7	8.0	10.7	10.7	8.0	2.7
MACH COST	0.3	0.9	0.9	0.8	0.5	0.3
MISC COST	60.6	61.2	17.3	16.7	16.7	206.6
TOTAL MONTH	63.5	70.1	28.9	28.2	25.2	209.5

FILE: OSD_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. OSO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS	1.2					
B INVENT/STUDY						
C WP IDENT/PREP	0.0	1.1	0.1			
D TD GENR/VALID	0.0	1.1	0.1			
E SOFTWARE CONV		0.4	1.2	0.8		
F DF/DB CONV		1.0	3.0	1.9		
G OCL CONV						
H REDOCUMENT			0.3	1.2	1.0	
I SYSTEM TEST				1.0	1.4	
J ACCEPT TEST					1.2	1.2
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT						
O TOOLS/AIDS						
SUBTOTALS	1.2	3.6	4.8	4.8	3.6	1.2

OUTPUT FOR

Utah

State Office

COST MODEL INPUT DATA FOR PROJECT USO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>USO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>1
5. No. of Files and Data Bases (1-99999)==========>823
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>250
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>573
11. No. of Job Streams/Independent Runs (1-99999)==========>1
12. % of Available/Up-to-date Documentation (0-1.00)==========>.46
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>.23
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)==>5
17. % Conversion Management & Contract Support (0-.30)==>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>33040
20. Salary Task C. Work Package Id & Prep (0-100000)==========>33040
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>33040
22. Salary Task E. Application Program Conv (0-100000)==========>33040
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>33040
24. Salary Task G. OCL Conversion (0-100000)==========>33040
25. Salary Task H. Redocumentation (0-100000)==========>33040
26. Salary Task I. System Testing (0-100000)==========>33040
27. Salary Task J. Acceptance Testing (0-100000)==========>33040
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>33040
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>1000
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==========>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>67938
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>25000
52. Baseline New Dev Rate DDL (10-100 (60 standard))==========>0

COST MODEL INPUT DATA FOR PROJECT USO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>0
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>2
73. Source/Target Language Desc (1-15 characters)========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)========>COBOL
85. Baseline New Dev Rate per Language (10-100)==========>10
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>40
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>NONE
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>0

COST MODEL INPUT DATA FOR PROJECT USO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: USO_COST.DAT2

```
*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  USO CONVERSION WITH GIS   *
*   01-04-1980   03:21:14   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

*****************************************************************************
```

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*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  USO CONVERSION WITH GIS   *
*   01-04-1980   03:21:20   NONCOMPATIBLE CONVERSION                         *
*****************************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.0	33.0	0.0	10.0	0.0	0.0	0.0
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	1.0	1.0
C. WP IDENT/PREP	0.4	33.0	13.2	10.0	1.3	1.2	15.7
D. TD GENR/VALID	1.9	33.0	62.7	10.0	6.3	0.0	69.0
E. SOFTWARE CONV	0.0	33.0	0.0	10.0	0.0	0.0	0.0
F. DF/DB CONV	2.1	33.0	69.3	10.0	6.9	0.0	76.2
G. OCL CONV	0.0	33.0	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	33.0	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.1	33.0	3.3	10.0	0.3	0.0	3.6
J. ACCEPT TEST	0.6	33.0	19.8	10.0	2.0	0.0	21.8
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	67.9	67.9
N. MGMT/CONT SUPT	0.1	33.0	3.3	0.0	0.0	100.0	103.3
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	25.0	25.0
TOTALS	5.2		171.6		16.8	282.6	471.0

```
*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              USO_COST.DAT2

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```

RESOURCE SCHEDULE
PROJECT NO. USO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
B INVENT/STUDY						
MISC COST	0.5	0.5				
C WP IDENT/PREP						
STAFF COST	1.8	5.5	5.9			
MACH COST	0.4	0.4	0.4			
MISC COST	0.4	0.4	0.4			
D TD GENR/VALID						
STAFF COST	8.6	26.1	27.9			
MACH COST	2.1	2.1	2.1			
E SOFTWARE CONV						
F DF/DB CONV						
STAFF COST			8.3	42.1	19.0	
MACH COST			2.3	2.3	2.3	
G OCL CONV						
H REDOCUMENT						
I SYSTEM TEST						
STAFF COST					3.3	
MACH COST					0.3	
J ACCEPT TEST						
STAFF COST					9.4	10.4
MACH COST					1.0	1.0
K SITE PREP						
MISC COST	43.8	43.8				
L SYSTEM TRANS						
M CONV TRAINING						
MISC COST						67.9
N MGMT/CONT SPT						
STAFF COST	0.3	0.6	0.8	0.8	0.6	0.3
MISC COST	16.7	16.7	16.7	16.7	16.7	16.7
O TOOLS/AIDS						
MISC COST	12.5	12.5				
SUBTOTALS						
STAFF COST	10.7	32.2	42.9	42.9	32.2	10.7
MACH COST	2.5	2.5	4.8	2.3	3.6	1.0
MISC COST	73.8	73.8	17.1	16.7	16.7	84.6
TOTAL MONTH	87.1	108.5	64.8	61.9	52.4	96.3

FILE: USO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. USO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6
A PLAN/ANALYSIS						
B INVENT/STUDY						
C WP IDEN./PREP	0.7	2.0	2.1			
D TD GENR/VALID	3.1	9.5	10.2			
E SOFTWARE CONV						
F DF/DB CONV			3.0	15.3	6.9	
G DCL CONV						
H REDOCUMENT						
I SYSTEM TEST					1.2	
J ACCEPT TEST					3.4	3.8
K SITE PREP						
L SYSTEM TRANS						
M CONV TRAINING						
N MGMT/CONT SPT	0.1	0.2	0.3	0.3	0.2	0.1
O TOOLS/AIDS						
SUBTOTALS	3.9	11.7	15.6	15.6	11.7	3.9

OUTPUT FOR

Wyoming

State Office

COST MODEL INPUT DATA FOR PROJECT WSO CONVERSION WITH GIS

1. Project No. (1-25 characters)==========>WSO CONVERSION WITH GIS
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>1
4. No. of Programs (1-99999)==========>1
5. No. of Files and Data Bases (1-99999)==========>1567
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>1567
11. No. of Job Streams/Independent Runs (1-99999)========>1
12. % of Available/Up-to-date Documentation (0-1.00)=====>.2
13. % Logic Paths Executed Existing Test Data (0-1.00)===>.25
14. % Logic Paths Required to be Executed (0-1.00)=======>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)===>5
17. % Conversion Management & Contract Support (0-.30)===>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)=====>35500
20. Salary Task C. Work Package Id & Prep (0-100000)=====>35500
21. Salary Task D. Test Data Set Gen/Valid (0-100000)====>35500
22. Salary Task E. Application Program Conv (0-100000)===>35500
23. Salary Task F. Data File/Data Base Conv (0-100000)===>35500
24. Salary Task G. OCL Conversion (0-100000)==========>35500
25. Salary Task H. Redocumentation (0-100000)==========>35500
26. Salary Task I. System Testing (0-100000)==========>35500
27. Salary Task J. Acceptance Testing (0-100000)=======>35500
28 Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>35500
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)=====>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)=======>.1
32. Machine Use % Task E. Application Conv (0-.50)=======>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)============>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)===>0
38. Other Costs Task B. Invent & Study (0-9999999)=======>1000
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)=========>0
41. Other Costs Task E. Application Conv (0-9999999)=====>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)=====>0
45. Other Costs Task I. System Testing (0-9999999)======>0
46. Other Costs Task J. Acceptance Testing (0-9999999)===>0
47. Other Costs Task K. Site Preparation (0-9999999)=====>87500
48. Other Costs Task L. System Transition (0-9999999)====>0
49. Other Costs Task M. Conv Training (0-9999999)=======>9165
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)======>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)=====>25000
52. Baseline New Dev Rate DDI (10-100 (60 standard))=====>0

COST MODEL INPUT DATA FOR PROJECT WSO CONVERSION WITH GIS

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>49
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>3
73. Source/Target Language Desc (1-15 characters)========>fortran
74. Baseline New Dev Rate per Language (10-100)==========>25
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>0
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>0
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>1000
84. Source/Target Language Desc (1-15 characters)========>none
85. Baseline New Dev Rate per Language (10-100)==========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>0
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)========>none
96. Baseline New Dev Rate per Language (10-100)==========>15
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>0
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>0
104. Automated Translation % Class 4 (0-1.00)==========>.9

COST MODEL INPUT DATA FOR PROJECT WSO CONVERSION WITH GIS

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: WSO_COST.DAT2

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*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  WSO CONVERSION WITH GIS    *
*   01-04-1980   03:20:25   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
*****************************************************************************

TASK A. SD=(( 3 *S) + ( .5 *P) + ( .5 *J))
TASK C. SD=( 3 *S) + ((P+F+J)/ 10 )
TASK D. SD=(( 2 *P) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *P) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(P/ 2 )+(S/ 2 )+((P+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((P+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

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*****************************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  WSO CONVERSION WITH GIS    *
*   01-04-1980   03:20:31   NONCOMPATIBLE CONVERSION                          *
*****************************************************************************
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CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.0	35.5	0.0	10.0	0.0	0.0	0.0
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	1.0	1.0
C. WP IDENT/PREP	0.7	35.5	24.9	10.0	2.5	1.2	28.6
D. TD GENR/VALID	4.0	35.5	142.0	10.0	14.2	0.0	156.2
E. SOFTWARE CONV	0.0	35.5	0.0	10.0	0.0	0.0	0.0
F. DF/DB CONV	1.5	35.5	53.3	10.0	5.3	0.0	58.6
G. OCL CONV	0.0	35.5	0.0	10.0	0.0	0.0	0.0
H. REDOCUMENT	0.0	35.5	0.0	0.0	0.0	0.0	0.0
I. SYSTEM TEST	0.1	35.5	3.6	10.0	0.4	0.0	4.0
J. ACCEPT TEST	1.0	35.5	35.5	10.0	3.6	0.0	39.1
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	91.7	91.7
N. MGMT/CONT SUPT	0.1	35.5	3.6	0.0	0.0	100.0	103.6
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	25.0	25.0
TOTALS	7.4		262.9		26.0	306.4	595.3

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*****************************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE              WSO_COST.DAT2

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RESOURCE SCHEDULE
PROJECT NO. WSO CONVERSION WITH GIS
PAGE 1

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS							
B INVENT/STUDY							
MISC COST	0.3	0.3	0.3				
C WP IDENT/PREP							
STAFF COST	1.9	5.7	7.5	6.6	3.2		
MACH COST	0.5	0.5	0.5	0.5	0.5		
MISC COST	0.2	0.2	0.2	0.2	0.2		
D TD GENR/VALID							
STAFF COST	10.7	32.9	42.7	37.7	18.0		
MACH COST	2.8	2.8	2.8	2.8	2.8		
E SOFTWARE CONV							
F DF/DB CONV							
STAFF COST			1.9	7.7	30.9	12.7	
MACH COST			1.3	1.3	1.3	1.3	
G OCL CONV							
H REDOCUMENT							
I SYSTEM TEST							
STAFF COST						3.6	
MACH COST						0.4	
J ACCEPT TEST							
STAFF COST						22.6	12.9
MACH COST						1.8	1.8
K SITE PREP							
MISC COST	29.2	29.2	29.2				
L SYSTEM TRANS							
M CONV TRAINING							
MISC COST							91.7
N MGMT/CONT SPT							
STAFF COST	0.3	0.6	0.6	0.6	0.6	0.6	0.3
MISC COST	14.3	14.3	14.3	14.3	14.3	14.3	14.3
O TOOLS/AIDS							
MISC COST	8.3	8.3	8.3				
SUBTOTALS							
STAFF COST	12.9	39.2	52.7	52.7	52.7	39.5	13.2
MACH COST	3.3	3.3	4.7	4.7	4.7	3.5	1.8
MISC COST	52.4	52.4	52.4	14.5	14.5	14.3	106.0
TOTAL MONTH	68.6	94.9	109.7	71.8	71.8	57.3	121.0

FILE: WSO_COST.SCH2

STAFFING SCHEDULE
PROJECT NO. WSO CONVERSION WITH GIS

MONTH	1	2	3	4	5	6	7
A PLAN/ANALYSIS							
B INVENT/STUDY							
C WP IDENT/PREP	0.6	1.9	2.5	2.2	1.1		
D TD GENR/VALID	3.6	11.1	14.4	12.8	6.1		
E SOFTWARE CONV							
F DF/DB CONV			0.6	2.6	10.4	4.3	
G DCL CONV							
H REDOCUMENT							
I SYSTEM TEST						1.2	
J ACCEPT TEST						7.6	4.4
K SITE PREP							
L SYSTEM TRANS							
M CONV TRAINING							
N MGMT/CONT SPT	0.1	0.2	0.2	0.2	0.2	0.2	0.1
O TOOLS/AIDS							
SUBTOTALS	4.3	13.2	17.8	17.8	17.8	13.3	4.4

OUTPUT FOR

Boise Interagency Fire Center

COST MODEL INPUT DATA FOR PROJECT BIFC CONVERSION

1. Project No. (1-25 characters)==========>BIFC CONVERSION
2. Compatible or Noncompatible? (C or N) ==========>N
3. No. of Systems (1-999)==========>5
4. No. of Programs (1-99999)==========>157
5. No. of Files and Data Bases (1-99999)==========>143
6. No. of Files/Data Bases Class A ==========>0
7. No. of Files/Data Bases Class B ==========>0
8. No. of Files/Data Bases Class C ==========>0
9. No. of Files/Data Bases Class D ==========>0
10. No. of Files/Data Bases Class E ==========>143
11. No. of Job Streams/Independent Runs (1-99999)==========>12
12. % of Available/Up-to-date Documentation (0-1.00)==========>.48
13. % Logic Paths Executed Existing Test Data (0-1.00)==========>.09
14. % Logic Paths Required to be Executed (0-1.00)==========>.7
15. No. of Days Duration for Acceptance Testing (1-360)==>30
16. No. of Probable Reruns for Systems Testings (0-10)==>5
17. % Conversion Management & Contract Support (0-.30)==>.02
18. % of Coordination Required for Documentation (0-.30)=>.1
19. Salary Task A. Conv Planning/Analysis (0-100000)==========>26370
20. Salary Task C. Work Package Id & Prep (0-100000)==========>26370
21. Salary Task D. Test Data Set Gen/Valid (0-100000)==========>26370
22. Salary Task E. Application Program Conv (0-100000)==========>26370
23. Salary Task F. Data File/Data Base Conv (0-100000)==========>26370
24. Salary Task G. OCL Conversion (0-100000)==========>26370
25. Salary Task H. Redocumentation (0-100000)==========>26370
26. Salary Task I. System Testing (0-100000)==========>26370
27. Salary Task J. Acceptance Testing (0-100000)==========>26370
28. Salary Task N. Conv Mgmt/Admin/Cont Supt (0-100000)==>26370
29. Machine Use % Task A. Conv Plan/Analysis (0-.50)==========>.1
30. Machine Use % Task C. WP Id & Prep (0-.50)==========>.1
31. Machine Use % Task D. TD Set Gen/Valid (0-.50)==========>.1
32. Machine Use % Task E. Application Conv (0-.50)==========>.1
33. Machine Use % Task F. DF/DB Conv (0-.50)==========>.1
34. Machine Use % Task G. OCL Conv (0-.50)==========>.1
35. Machine Use % Task I. System Test (0-.50)==========>.1
36. Machine Use % Task J. Accept Test (0-.50)==========>.1
37. Other Costs Task A. Conv Plan/Analysis (0-9999999)==========>0
38. Other Costs Task B. Invent & Study (0-9999999)==========>330
39. Other Costs Task C. WP ID/Prep (0-9999999)==========>1200
40. Other Costs Task D. TD Gen/Valid (0-9999999)==========>0
41. Other Costs Task E. Application Conv (0-9999999)==========>0
42. Other Costs Task F. File/Data Base Conv (0-9999999)==>0
43. Other Costs Task G. OCL Conv (0-9999999)==========>0
44. Other Costs Task H. Redocumentation (0-9999999)==========>0
45. Other Costs Task I. System Testing (0-9999999)==========>0
46. Other Costs Task J. Acceptance Testing (0-9999999)==========>0
47. Other Costs Task K. Site Preparation (0-9999999)==========>87500
48. Other Costs Task L. System Transition (0-9999999)==========>0
49. Other Costs Task M. Conv Training (0-9999999)==========>21842
50. Other Costs Task N. Mgmt/Cont Supt (0-9999999)==========>100000
51. Other Costs Task O. Conv Tools/Aids (0-9999999)==========>0
52. Baseline New Dev Rate DDL (10-100 (60 standard)==========>0

53. Lines of Code Class 1 (0-9999999)==========>0
54. Automated Translation % Class 1 (0-1.00)==========>0
55. Lines of Code Class 2 (0-9999999)==========>0
56. Automated Translation % Class 2 (0-1.00)==========>0
57. Lines of Code Class 3 (0-9999999)==========>0
58. Automated Translation % Class 3 (0-1.00)==========>0
59. Lines of Code Class 4 (0-9999999)==========>0
60. Automated Translation % Class 4 (0-1.00)==========>0
61. Lines of Code Class 5 (0-9999999)==========>0
62. Baseline New Dev Rate OCL/JCL (10-100 (60 standard))=>60
63. Lines of Code Class 1 (0-9999999)==========>6700
64. Automated Translation % Class 1 (0-1.00)==========>0
65. Lines of Code Class 2 (0-9999999)==========>0
66. Automated Translation % Class 2 (0-1.00)==========>0
67. Lines of Code Class 3 (0-9999999)==========>0
68. Automated Translation % Class 3 (0-1.00)==========>0
69. Lines of Code Class 4 (0-9999999)==========>0
70. Automated Translation % Class 4 (0-1.00)==========>0
71. Lines of Code Class 5 (0-9999999)==========>0
72. Maximum No. of Source/Target Language Pairs (1-5)====>3
73. Source/Target Language Desc (1-15 characters)=========>COBOL
74. Baseline New Dev Rate per Language (10-100)==========>30
75. Lines of Code Class 1 (0-9999999)==========>0
76. Automated Translation % Class 1 (0-1.00)==========>.15
77. Lines of Code Class 2 (0-9999999)==========>33000
78. Automated Translation % Class 2 (0-1.00)==========>.5
79. Lines of Code Class 3 (0-9999999)==========>500
80. Automated Translation % Class 3 (0-1.00)==========>.8
81. Lines of Code Class 4 (0-9999999)==========>0
82. Automated Translation % Class 4 (0-1.00)==========>.9
83. Lines of Code Class 5 (0-9999999)==========>0
84. Source/Target Language Desc (1-15 characters)=========>INFO
85. Baseline New Dev Rate per Language (10-100)==========>15
86. Lines of Code Class 1 (0-9999999)==========>0
87. Automated Translation % Class 1 (0-1.00)==========>.15
88. Lines of Code Class 2 (0-9999999)==========>0
89. Automated Translation % Class 2 (0-1.00)==========>.5
90. Lines of Code Class 3 (0-9999999)==========>0
91. Automated Translation % Class 3 (0-1.00)==========>.8
92. Lines of Code Class 4 (0-9999999)==========>35200
93. Automated Translation % Class 4 (0-1.00)==========>.9
94. Lines of Code Class 5 (0-9999999)==========>0
95. Source/Target Language Desc (1-15 characters)=========>BASIC
96. Baseline New Dev Rate per Language (10-100)==========>25
97. Lines of Code Class 1 (0-9999999)==========>0
98. Automated Translation % Class 1 (0-1.00)==========>.15
99. Lines of Code Class 2 (0-9999999)==========>0
100. Automated Translation % Class 2 (0-1.00)==========>.5
101. Lines of Code Class 3 (0-9999999)==========>600
102. Automated Translation % Class 3 (0-1.00)==========>.8
103. Lines of Code Class 4 (0-9999999)==========>600
104. Automated Translation % Class 4 (0-1.00)==========>.9

COST MODEL INPUT DATA FOR PROJECT BIFC CONVERSION

105. Lines of Code Class 5 (0-9999999)==========>0
106. Source/Target Language Desc (1-15 characters)==========>NONE
107. Baseline New Dev Rate per Language (10-100)==========>10
108. Lines of Code Class 1 (0-9999999)==========>0
109. Automated Translation % Class 1 (0-1.00)==========>.15
110. Lines of Code Class 2 (0-9999999)==========>0
111. Automated Translation % Class 2 (0-1.00)==========>.5
112. Lines of Code Class 3 (0-9999999)==========>0
113. Automated Translation % Class 3 (0-1.00)==========>0
114. Lines of Code Class 4 (0-9999999)==========>0
115. Automated Translation % Class 4 (0-1.00)==========>0
116. Lines of Code Class 5 (0-9999999)==========>0
117. Source/Target Language Desc (1-15 characters)==========>NONE
118. Baseline New Dev Rate per Language (10-100)==========>10
119. Lines of Code Class 1 (0-9999999)==========>0
120. Automated Translation % Class 1 (0-1.00)==========>.15
121. Lines of Code Class 2 (0-9999999)==========>0
122. Automated Translation % Class 2 (0-1.00)==========>.5
123. Lines of Code Class 3 (0-9999999)==========>0
124. Automated Translation % Class 3 (0-1.00)==========>.8
125. Lines of Code Class 4 (0-9999999)==========>0
126. Automated Translation % Class 4 (0-1.00)==========>0
127. Lines of Code Class 5 (0-9999999)==========>0

FILE: bif_cost.dat1

```
**********************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  BIFC CONVERSION   *
*   01-01-1980   00:37:43   ALGORITHMS USED FOR CONVERSION RESOURCE ESTIMATING*
**********************************************************************

TASK A. SD=(( 3 *S) + ( .5 *F) + ( .5 *J))
TASK C. SD=( 3 *S) + ((F+F+J)/ 10 )
TASK D. SD=(( 2 *F) + ( 1 *F)) * (.2+(TDR-TDE)) * (1-(DOC/3))
TASK E. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((LOCs * (1-Ts))/MCPRs) + ((LOCs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK F. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((DDLs * (1-Ts))/MCPRs) + ((DDLs * Ts)/ 1000 )
        SDf=(Ff * FCFf) * (1-(DOC/2))
        SD=SUM of SDs (where s=1-5) and SDf (where f=A-E)
TASK G. MCPRs=(BR*NDE)/(((1-(DOC/2))*DEs)+PEs+TEs)
        SDs=((OCLs * (1-Ts))/MCPRs) + ((OCLs * Ts)/ 1000 )
        SD=SUM OF SDs (where s=1-5)
TASK H. SD=(( .75 *F) + ( 3 *S)) * (1+RCOR) * DOC
TASK I. SD=((J/ 4 )+(F/ 2 )+(S/ 2 )+((F+F+J)/ 80 ))*(1+(RE/10))
TASK J. SD=((DUR*(S/ 8 ))+((( 1 *J) + ((F+F)/ 5 ))*(1-e**-(DUR/20))))
TASK N. SD=(TOTAL SD FOR TASKS A THRU J) * MCS

**********************************************************************


**********************************************************************
*   CONVERSION COST MODEL (VERSION 4) FOR PROJECT  BIFC CONVERSION   *
*   01-01-1980   00:37:49   NONCOMPATIBLE CONVERSION                 *
**********************************************************************
```

CONVERSION TASK	STAFF-YRS	RATE (000$)	STAFF-COST (000$)	M%	MACH-COST (000$)	MISC-COST (000$)	TOT-COST (000$)
A. PLAN/ANALYSIS	0.4	26.4	10.6	10.0	1.1	0.0	11.7
B. INVENT/STUDY	0.0	0.0	0.0	0.0	0.0	0.3	0.3
C. WP IDENT/PREP	0.2	26.4	5.3	10.0	0.5	1.2	7.0
D. TD GENR/VALID	1.3	26.4	34.3	10.0	3.4	0.0	37.7
E. SOFTWARE CONV	1.3	26.4	34.3	10.0	3.4	0.0	37.7
F. DF/DB CONV	0.1	26.4	2.6	10.0	0.3	0.0	2.9
G. OCL CONV	0.3	26.4	7.9	10.0	0.8	0.0	8.7
H. REDOCUMENT	0.3	26.4	7.9	0.0	0.0	0.0	7.9
I. SYSTEM TEST	0.5	26.4	13.2	10.0	1.3	0.0	14.5
J. ACCEPT TEST	0.3	26.4	7.9	10.0	0.8	0.0	8.7
K. SITE PREP	0.0	0.0	0.0	0.0	0.0	87.5	87.5
L. SYSTEM TRANS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
M. CONV TRAINING	0.0	0.0	0.0	0.0	0.0	21.8	21.8
N. MGMT/CONT SUPT	0.1	26.4	2.6	0.0	0.0	100.0	102.6
O. TOOLS/AIDS	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTALS	4.8		126.6		11.6	210.8	349.0

```
**********************************************************************

COST MODEL INPUT DATA FOR THIS RUN IN FILE          bif_cost.dat1

**********************************************************************
```

STAFFING SCHEDULE
PROJECT NO. BIFC CONVERSION

MONTH	1	2	3	4	5	6
PLAN/ANALYSIS	4.2	5.4				
INVENT/STUDY						
RP IDENT/PREP		1.0	1.4			
FD GENR/VALID		6.4	9.2			
SOFTWARE CONV			5.1	12.9		
DE/DB CONV			0.3	0.9		
DCL CONV			1.0	2.6		
REDOCUMENT				0.2	3.4	
SYSTEM TEST				0.6	7.8	
ACCEPT TEST					1.7	4.3
SITE PREP						
SYSTEM TRANS						
CONV TRAINING						
MGMT/CONT SPT	0.5	1.4	1.8	1.8	1.3	0.4
TOOLS/AIDS						
SUBTOTALS	4.7	14.2	18.9	18.9	14.2	4.7

RESOURCE SCHEDULE
PROJECT NO. BIFC CONVERSION
PAGE 1

MONTH	1	2	3	4	5	6
PLAN/ANALYSIS						
STAFF COST	14.7	18.7				
MACH COST	1.6	1.6				
INVENT/STUDY						
MISC COST	0.1	0.1	0.1			
DB IDENT/PREP						
STAFF COST		3.4	4.9			
MACH COST		0.4	0.4			
MISC COST		0.6	0.6			
ID GENR/VALID						
STAFF COST		22.3	31.9			
MACH COST		2.7	2.7			
SOFTWARE CONV						
STAFF COST			17.8	44.7		
MACH COST			3.2	3.2		
DB/DB CONV						
STAFF COST			1.2	3.0		
MACH COST			0.2	0.2		
DCL CONV						
STAFF COST			3.6	8.9		
MACH COST			0.6	0.6		
REDOCUMENT						
STAFF COST				0.8	11.7	
SYSTEM TEST						
STAFF COST				1.9	27.2	
MACH COST				1.5	1.5	
ACCPT TEST						
STAFF COST					5.8	15.0
MACH COST					1.0	1.0
SITE PREP						
MISC COST	95.0	95.0	95.0			
SYSTEM TRANS						
CONV TRAINING						
MISC COST						20.9
MGMT/CONT SPT						
STAFF COST	1.7	4.9	6.3	6.3	4.5	1.4
TOOLS/AIDS						
SUBTOTALS						
STAFF COST	16.4	49.3	65.7	65.7	49.3	16.4
MACH COST	1.6	4.8	7.1	5.4	2.5	1.0
MISC COST	95.1	95.7	95.7			20.9
TOTAL MONTH	113.2	149.7	168.5	71.1	51.8	38.4

FILE: BIF_COST.SCH

APPENDIX E
POINTS OF CONTACT

This appendix lists the names, titles, and telephone numbers of the key management personnel responsible for the procurement/conversion effort in each State Office, BIFC, and DSC. These people should be contacted if additional information is required concerning the conversion effort.

Appendix E
BLM Contact List

Name	Title	Telephone Number
Kenneth J. Alexander	Chief, Information Systems Branch California State Office	(916) 978-4781
Dennis L. Anderson	Chief, Information Systems Branch Nevada State Office	(702) 784-5836
Richard W. Astley	Chief, Information Systems Division Boise Interagency Fire Center	(208) 334-9880
R. Wayne Elven	Chief, Information Systems Branch Oregon State Office	(503) 231-2220
Luis Garcia	Chief, Information Systems Branch Wyoming State Office	(307) 772-2061
Wayne Gilbert	Chief, Information Systems Branch Eastern States Office	(703) 274-0165
Ed Harne	Chief, Information Systems Branch Utah State Office	(801) 524-3084
Ernest L. Kemmis	Chief, Information Systems Branch Montana State Office	(406) 657-6686
Lowell King	Chief, Information Systems Branch Alaska State Office	(907) 271-5056
Paul Lance, Jr.	Chief, Information Systems Branch Arizona State Office	(602) 241-5558
Robert Lovelace	Chief, Information Systems Branch Colorado State Office	(303) 236-1736
Scott MacPherson	Chief, Division of Computer Applications, DSC	(303) 236-6518
Edward Roberts	Chief, Electronic Data Systems Branch New Mexico State Office	(505) 988-6084
Ben Rumph	Chief, Division of Computer Operations, DSC	(303) 236-6519
Arlan I. Smith	Chief, Information Systems Branch Idaho State Office	(208) 334-1350
Jack Webber	Chief, Division of Information Resources Management	(202) 653-8853

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